JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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MYRON NILE FORD.

The great grandfather of the chairman of the House of Delegates was a native of Maryland and a pioneer settler of Champaign County, Ohio.

The father of the subject of this sketch moved to Marion Township, in Allen County, where Nile was born July 5, 1882. The home of young Ford, until his majority, was on his father's farm on which a stone quarry was located. He assisted in the farm work and in preparing the stone of the quarry for the public highway.

His earlier education was received in the township schools and, later, he attended Ohio Northern University at Ada. Thereafter, the young man matriculated at the Scio College of Pharmacy, of which Dr. J. H. Beal was then the dean. On completion of his college work in 1906, Mr. Ford was awarded the first prize for pharmaceutical laboratory work—membership in the AMERICAN PHARMACEUTICAL ASSOCIATION. He returned to his home county and found employment with King Brothers Drug Store in Delphos; later he accepted a position in King and Williams Pharmacy and after completing the years of apprenticeship, qualified as a pharmacist. Here he continued as manufacturing pharmacist until 1912, when he was named as secretary of the Ohio State Board of Pharmacy, which position he holds at this time.

Secretary Ford exhibits a deep interest in everything that pertains to Pharmacy, both in national and state affairs. In 1925–1926 he was honored with the presidency of the National Association Boards of Pharmacy, has been active in committee work of the A. PH. A. and has been secretary and treasurer of the Conference of Pharmaceutical Law Enforcement Officials since it was organized in 1928.

Mr. Ford married Miss Goldie Mae Friedline of Delphos in 1913. Mrs. Ford died in 1920 and is survived by a son and daughter.

Chairman Ford has been active in both Scottish and York Rite Masonry, is a Knight of Pythias and a member of the Methodist Church. His hobby is enjoying the home with his children, golfing and hunting.

EDITORIAL

E. G. EBERLE, EDITOR EMERITUS. E. F. KELLY, ACTING EDITOR.

INFORMATIVE STATEMENT ABOUT THE U. S. PHARMACOPŒIA.

ON PAGES 1001 to 1018 of this issue of the JOURNAL and under the title quoted above, will be found a general statement of progress including an accompanying financial statement, as issued by the Board of Trustees of the U. S. P. Convention. Both of these statements cover the first nine years of the current decade and, therefore, relate to the U. S. P. X and U. S. P. XI, since the latter was issued in 1936.

Heretofore, the Board of Trustees has reported decennially to the Convention. It is indicated that this precedent was broken and that the statements were issued, as a preliminary report, in view of the unusual developments during the period covered and in order to make available to all who are interested in the Pharmacopœia, information about Pharmacopœial activities in advance of the decennial Convention in May 1940. The hope is expressed that this will be helpful to all concerned.

The Pharmacopœia is of basic importance to the profession of Pharmacy. Although other groups have representation in the U. S. P. Convention, Pharmacy shares with Medicine the direct responsibility of continuing the program which has been carried on and perfected during the period since the Pharmacopœia was established in 1820. This program has brought to our Pharmacopœia recognition as the peer of any similar mark in the world and as a book of standards in Federal and State Food, Drug and Cosmetic Acts.

The delegates who will represent the pharmaceutical associations and teaching institutions of the country in the Convention of 1940 should be chosen on the basis of their ability to attend the Convention, to select the best qualified persons as members of the Committee of Revision and Board of Trustees, and to pass judgment on the various suggestions that will be proposed with the view of improving the Pharmacopœia and the method of its revision and distribution.

Some of the suggestions already proposed involve important changes in the Pharmacopœial program and no doubt others will follow. They are the result of the new position in which the Pharmacopœia is placed by the unusual progress in the medical professions during recent years and by the revision of the Federal and State Food, Drug and Cosmetic Laws.

The scope and character of Pharmacopœial activities and finances are explained in considerable detail in these statements. They should be read and studied by as many pharmacists as possible and particularly by those who will take part in the 1940 Convention.—E. F. K.

REQUEST FOR JOURNALS.

If any of our members and friends have old issues of the JOURNAL, for the years 1912 to 1916, inclusive, or bound volumes for these years, which they are willing to donate, they will be very acceptable as our supply is growing short and we are having frequent requests for these old volumes, either bound or unbound. Any assistance in this line will be greatly appreciated as it is our aim to supply these valuable reference books to as many Libraries as possible. We are particularly in need of October 1914.

RESPONSIBILITIES AND EDUCATIONAL BACKGROUND OF THE PHARMACIST.

Radio Broadcast For National Pharmacy Week.

BY A. G. DUMEZ.[1]

As just stated by the announcer, this broadcast is the beginning of the program for the annual observance of National Pharmacy Week, a week set aside by the pharmacists of this country in which a united effort is made by them to acquaint the public with the ways in which Pharmacy serves the community and with the responsibilities which this entails.

The observance of National Pharmacy Week, begun fifteen years ago, is now so well established and its importance as a factor in stimulating an interest in public health activities is so widely recognized, that it has become the custom for the President of the United States, himself, to issue a public statement calling attention to the approach of this event and to its significance. In a statement issued on September 25th of this year, the President wrote: (See page 563, September Journal.)

As my contribution to the program for the observance of this week, I shall endeavor to tell you something of the responsibilities and educational background of that unassuming person, who stands behind his counter ready and eager to serve you, whether you desire to have a prescription compounded, to purchase some simple family remedy or, perhaps, only a postage stamp, and who you call your pharmacist.

Herbert Spencer, in his essay on education, makes use of the following statement which he attributes to an unnamed writer: "The first requisite to success is to be a good animal," and he adds: "To be a nation of good animals is the first condition to national prosperity."

A sound body is generally recognized as an essential factor in making for success. Without a sound body, man is handicapped, not only in the achievement of success in his calling, but also in the attainment of a full measure of happiness and comfort in living. The condition of our bodies is, therefore, of vital concern to all of us.

Pharmacy is one of the several professions, the practitioners of which consecrate their lives to the service of helping us to maintain sound bodies. Legally and morally, the pharmacist's responsibilities are as great as those of the physician. notwithstanding the fact that economic necessity and public demand generally compel him to conduct a commercial emporium in conjunction with the practice of his profession.

The practice of pharmacy, considered strictly from the standpoint of professional service, comprises all of the processes and operations involved in the selection and identification of drugs and chemicals, their manipulation or combination into forms suitable for administration to man or animals and the proper labeling of the finished product. This service, commonly referred to as the filling of prescriptions, requires a broad knowledge of the properties of the materials handled, accuracy and skill, and is undoubtedly the most important of the several services rendered by the pharmacist.

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[1] President of The American Pharmaceutical Association.

Considered from a broader standpoint, the practice of pharmacy comprehends all of the related services now offered by the average drug store, the most important of which are the administration of first aid in cases of injury due to accident and the giving of information and advice upon matters pertaining to public health. With respect to the latter service, the report of a study of the activities and duties of the pharmacist financed by a grant from the Commonwealth Fund and directed by Dr. W. W. Charters of the University of Pittsburgh, carries the following pertinent statement: "The pharmacists are more strategically situated than any other group of individuals to give personal advice upon matters of public health on which they are informed." This service is given free of charge and can be obtained within easy walking distance from your home or place of business. The materials which may be needed to make use of this information or advice are kept in stock and can be obtained promptly. Here again, a broad knowledge of the subject is required and accuracy and good judgment are essential.

The responsibilities of the pharmacist are many and not all of them are easy to bear. He is legally accountable for any deviation from standard in the quality of the drugs and medicines which he sells over the counter or dispenses on prescriptions, for neglect to register the sales of poisons, for failure to comply with the law in the sale of habit-forming drugs such as the narcotics and certain hypnotics, for dispensing drugs or medicines which are not the same in all respects as those ordered by the physician, for mistakes made in the filling of prescriptions, for inaccuracies in dosage and for the improper labeling of drugs and medicines. In most of the states, he must have on file in his store the latest revised editions of the two official standards for drugs and medicines, the United States Pharmacopœia and the National Formulary, and it follows as a logical sequence that he must be equipped with the proper pharmaceutical utensils to enable him to compound the preparations contained in these two books of standards and to fill prescriptions properly.

Some of the foregoing carry a moral as well as a legal responsibility, but the pharmacist is also morally answerable for the sale of certain drugs and medicines for improper use, for raising false hopes in the minds of the sick by recommending the purchase of medicines for the cure of diseases which are known to be incurable, for giving false information with regard to the value of a drug or medicine as a remedy in order to make a sale, for failure to supply the poor with drugs and medicines when needed for immediate use, even though they cannot pay for them, for the injury to character which may result from divulging information with regard to the purchases made by his customers, and for many other acts of both, commission and omission.

Because of the importance of the pharmaceutical services heretofore mentioned as a factor in the maintenance of the health of the public and because of the legal and moral responsibilities involved, it follows that pharmacists must have a special kind of education and training to fit them to give these services and to assume their responsibilities. As a matter of fact, the necessity for some official requirement covering this point is recognized as so essential that all of the various states have made provision for it in the regulatory laws which they have enacted.

Every state in the Union has on its statute books laws regulating the practice of pharmacy. All of these laws require that applicants for a license to practice pharmacy must pass a satisfactory examination given by a board of pharmaceutical

examiners and most of them require graduation from high school and an approved college of pharmacy before the applicants are eligible to take this examination. In addition, the laws of the states, with one or two exceptions, require that the applicants before presenting themselves for examination shall furnish evidence of having had one to four years of experience in a pharmacy where physicians' prescriptions are regularly compounded.

The subjects covered in the examinations given by the examining boards of the different states are not identical in all cases, but embrace, as a general rule, Theoretical Pharmacy, Practical Pharmacy, Dispensing, Pharmaceutical Mathematics, Pharmaceutical Chemistry, Pharmaceutical Botany, Materia Medica or Pharmacology, Posology, Toxicology and Therapeutics, Serology and Immunology and Pharmaceutical Law; all of which subjects apply more or less directly to the every day work of the pharmacist, the object of the boards of examiners being to determine the fitness of applicants for licensure to practice pharmacy. Students beginning the study of Pharmacy, however, must take certain foundational courses to prepare them to undertake the study of these applied subjects, *e. g.*, General Chemistry, Qualitative and Quantitative Analysis, Physics, Biology, Physiology and Mathematics (Algebra and Trigonometry).

To furnish the kind of education needed to prepare pharmacists to give the service which the public expects of them and to meet their legal and moral responsibilities, there are sixty-eight colleges of pharmacy now operating throughout the various states. Fifty-three of these are integral parts of universities, most of which are state universities, four have university affiliations and eleven operate independently. All of these colleges require the completion of a minimum of four years of college work for graduation, including, in addition to the subjects already enumerated, courses in the cultural subjects, Economics, Public Health and a variety of other subjects intended to fit the student to render the many non-professional services expected of the pharmacist and to prepare him to take his proper place in the life of the community.

To make certain that every college will give at least the minimum amount of instruction necessary for a thorough understanding of the essential subjects and to provide for greater uniformity in the pharmacy curricula in other respects, there was created in 1906 the National Pharmaceutical Syllabus Committee. The duties of this committee are to fix the content and scope of the pharmacy curriculum and to outline the work to be given in each of the thirty-five or more subjects comprising it. To provide for the maintenance of proper standards in laboratory and classroom instruction, there has been set up still another supervisory committee. This committee is known as The American Council on Pharmaceutical Education. For the first four years of its existence, the Council worked on the preparation of standards which an acceptable college of pharmacy might reasonably be expected to meet. Since the completion of this task about a year and a half ago, the Council has functioned as an accrediting agency and is now engaged in inspecting the colleges to determine which ones meet these standards and, therefore, merit accreditment.

In view of what has already been accomplished in building and maintaining a proper educational background for the pharmacist, it is believed that you will agree with me when I assert that Pharmacy has recognized its responsibility in this re-

gard, that its practitioners are fully qualified from the standpoint of education and training to assume the responsibilities placed upon them and to give the high-type of professional service which you have the right to expect of them, and that they are, therefore, deserving of your confidence and trust.

A. G. DuMez,
President.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. PROGRAM OF SECTION ON PHARMACY.

DESHLER-WALLICK HOTEL, COLUMBUS, O.

Wednesday, December 27, 10:30 A.M.

1. The Chemistry of the Viburnums, Justin L. Powers, University of Michigan.
2. Methenamine Mandelate: Preparation, Toxicity and Antiseptic Value, Glenn L. Jenkins, University of Minnesota.
3. The Bioassay of Aconite, B. V. Christensen and J. W. Nelson, Ohio State University.
4. The Use of Oral Vaccine in the Prophylaxis of the Common Cold, Leonard J. Piccoli, Fordham University.
5. Solanum Carolinense, R. L. Murray, Ohio State University.

Wednesday, December 27, 2:30 P.M.

6. A Method for the Determination of Peptic Activity, Carl J. Klemme and Lee F. Worrell, Purdue University.
7. Employee Predictive Tests, C. M. Brown, Ohio State University.
8. The Pharmacology of Soaps, Leroy D. Edwards, Western Reserve University.
9. A Criterion for Distinguishing between Virgin and Parous Animals, Richard A. Deno, Rutgers University.
10. The Uterine Sedative Action of Viburnums, James C. Munch.

GLENN L. JENKINS, *Chairman Program Committee.*

GOLDEN GATE DENTAL CONGRESS.

This Congress was held at the Fairmount Hotel, San Francisco, Calif., September 25–28, 1939. Prof. T. C. Daniels, Assistant Dean, College of Pharmacy, University of California, addressed the Scientific Section of the Congress on the subject of "Practical Aspects of Dental Pharmacy."

At the request of the officials of the Congress, the A. PH. A. supplied material for a dental exhibit through the coöperation of Dr. George C. Schicks, Chairman of the A. PH. A. Committee on Dental Pharmacy. Copies of "Notes for the Dentist on Official Medication," were furnished for distribution.

INFORMATIVE STATEMENT ABOUT THE U. S. PHARMACOPŒIA.*

The nine years of the decade which will close in May 1940 have probably been the most important period in the history of the Pharmacopœia. Medical and pharmaceutical progress has been more rapid and has brought about more important changes in medication than in any preceding decade. In addition, the enactment of the new Federal Food, Drug and Cosmetic Act has brought many additional and exacting problems to the Pharmacopœia which require prompt and accurate solution if the Pharmacopœia is to maintain its present recognition under that legislation and under similar legislation by the states. Furthermore, the financial outlay necessary to meet the usual as well as these added responsibilities of the Pharmacopœia has been greater than in any preceding decade and this has required careful supervision of income and disbursements.

In recent decades, the Committee of Revision was practically inactive after the Pharmacopœia was issued and the expenses of revision during the latter half of the decades were very greatly reduced. However, the conditions referred to above have led to a policy of continuous revision of the Pharmacopœia which in turn has required the issuance of a First Supplement in 1937 and of a Second Supplement in 1939 to the original U. S. P. XI, which was issued in 1936. In other words, the Pharmacopœia of 1939 consists of three volumes instead of one volume as heretofore, and since the present Committee of Revision plans to present the practically completed manuscript of the U. S. P. XII to the U. S. P. Convention in May 1940, it will have prepared the manuscript of two full editions of the Pharmacopœia in one decade.

In view of these unusual developments, the Board of Trustees is issuing as a preliminary report the following general statement of progress, including the accompanying financial statement, both of which cover the operations of the first nine years of the decade. These statements are being sent to the members of the 1930 Convention, to the delegates to the 1940 Convention as they are appointed, to the medical and pharmaceutical press, and to others interested in Pharmacopœial revision and management, in the hope that they will be informative and helpful to all concerned.

How to keep Pharmacopœial revision fully abreast of medical progress and at the same time fully responsive to the increased responsibilities placed upon it by food, drug and cosmetic legislation, is one of the important problems before the Pharmacopœia. Whether Supplements are the best means of keeping revision up-to-date or whether some other method is more suitable, is to be determined. The 1930 Convention authorized the issuance of Supplements and this method has been followed during the decade.

The Pharmacopœia and the Public.—The original purpose of the Pharmacopœia was to serve the professions of medicine and pharmacy. With its recognition under the Food and Drugs Act, its purpose was broadened to include service to

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* Issued by the U. S. Pharmacopœial Board of Trustees.

Walter A. Bastedo, M.D.

S. Solis Cohen, M.D. — E. F. Kelly, Phar.D.
E. Fullerton Cook, Ph.M. — Robert L. Swain, Ph.M.
James H. Beal, Sc.D., *Chairman* — Samuel C. Henry, Ph.M., *Secretary*

the public in providing standards which would protect the people in the purchase and use of the drugs and medicines which they required. The protection of the consuming public in its field has become a responsibility of the Pharmacopœia, and those who direct its revision and management have tried to discharge this responsibility by working in close coöperation with the authorities charged with law enforcement, federal, state and local.

The Pharmacopœia, the Physician and the Pharmacist.—The value of the Pharmacopœia from the point of view of the physician and the pharmacist rests largely upon its official list of medicinal products. The Pharmacopœia of to-day, under the leadership of the Sub-Committee on Scope, has endeavored to provide a selected list of medicines for the use of prescribers and dispensers which includes the most important therapeutic agents available and adequate for necessary medical needs. Some medicinal agents of first importance are under proprietary control and are therefore not available for U. S. P. recognition. The plan approved by the Convention in 1930, providing that decisions of the Sub-Committee on Scope could be changed only by a two-thirds vote of the entire Committee of Revision, of which 17 out of 50 members are physicians, has been carried out. This plan contemplated that decisions as to the admissions and deletions of therapeutically active substances should be under the control of the medical members of the Committee of Revision.

The Pharmacopœia is increasingly providing the necessary armamentarium for the practice of medicine and this service has been notably increased by the issuance of Supplements and Interim Revisions. The introduction of an additional method for careful selection of the list of official medicines has been made possible by two recent Pharmacopœial developments. Recommendations concerning the most valuable therapeutic agents available for treating the diseases under consideration are being obtained from outstanding clinicians in every field of medical practice and when these specialists recommend medicinal substances not already recognized, these are reviewed for possible Pharmacopœial acceptance. To insure correct decisions in the final selection, each new item is having consideration in the light of current medical literature and an abstract of clinical evidence will be made available for the Sub-Committee on Scope before the final votes on admissions and deletions for the next Pharmacopœia are taken.

The U. S. P., the N. F. and the Enforcement Officials.—When the first Food and Drugs Act was passed by Congress in 1906, only a few established standards for foods were available, but in the field of therapeutics, the Pharmacopœia had already been in existence for almost one hundred years and the National Formulary for about twenty years. These books were so well established that they were recognized as standards under the federal and state acts.

Fortunately these books have been so efficiently revised and so professionally controlled that they have increasingly established their qualifications and were again recognized under the 1938 Federal Food, Drug and Cosmetic Act. Under this legislation, their responsibility has been greatly increased and close affiliation with enforcement officials has been made progressively more important.

The Pharmacopœia, as will be indicated later, is receiving valuable assistance from the technical experts and enforcement officials of the Government in solving the many intricate and difficult problems of revision and in accordance with a fully

established policy, the Committees of Revision of the U. S. P. XI and N. F. VI have maintained an effective plan of coöperation. The Chairman of the U. S. P. Committee was made an Associate Member of the N. F. Committee and he has attended every meeting of the N. F. Committee and received all communications. Likewise, the Chairman of the N. F. Committee, being a member of the U. S. P. Committee of Revision, has received all U. S. P. Circulars. Furthermore, the two chairmen, during the time when the two books were in press, held a number of conferences and corresponded continuously with the object that the two books would be in harmony.

Process of Revision.—As is provided in the Constitution and By-Laws of the Convention, the responsibility of revising the Pharmacopœia rests on the Committee of Revision, consisting of fifty members, with the President of the Convention, who has always been a physician, as an ex-officio member. In this capacity the President has always had a vote and the status of other members. Seventeen of the Committee are physicians and the other thirty-three members include pharmacists and the specialists whose services are required in order to deal effectively with the many problems of revision.

The Committee of Revision in turn elects its General Chairman, Vice-Chairmen and Secretary, and an Executive Committee of Revision. In this decade, the members of the Executive Committee have been the chairmen of the fifteen Sub-Committees. In addition, each Sub-Committee may select auxiliary members and this plan brings into the program of revision many able workers on special problems. The recommendations of each Sub-Committee are submitted to the full committee for final consideration and decision.

Two meetings of the general committee and one special meeting of the Executive Committee have been held during the nine-year period. Several Sub-Committees have held extra conferences, notably the Sub-Committees on Scope, on Inorganic Chemicals, on Organic Chemicals and on Reagents and Test Solutions. These Sub-Committees are mentioned because the first named is interested in almost every monograph and the others deal with the chemical monographs, of which there are nearly three hundred in the Eleventh Revision of the Pharmacopœia.

Extensive experimental procedures have been carried out under the supervision of Sub-Committee Chairmen in all of these fields, for the establishment of the standards of the U. S. P. XI. To illustrate, comprehensive studies are being made to improve the assay methods for Digitalis, Posterior Pituitary and Ergot, and other assay procedures are under investigation for determining the value of Aloe and Capsicum.

For proper organization each Sub-Committee operates under the direction of its Chairman. In its bulletins will be found the proposals, discussions and decisions of the Sub-Committee with respect to all monographs for which it is responsible. In the Sub-Committees where the greatest work is concentrated, the Chairman, besides directing the program, often carries out studies with the aid of a technical assistant, and he or the institution with which he is affiliated usually offers without charge the laboratory and other facilities necessary for carrying out the investigations. This policy has brought to the Pharmacopœia the free use of some of the best-equipped and most adequate laboratory facilities in the country, as well as the voluntary direction of experts and specialists in each division of

Pharmacopœial activity. The fifty-one members of the Committee of Revision were selected by the 1930 Convention to insure that able and interested workers would be secured and that experts in every phase of revision work would be included. The results of the work of this group speak for themselves in the U. S. P. XI and in the two Supplements. These results do not, however, record the magnitude of the work of revision nor the details that are involved.

The fifteen Sub-Committee Chairmen have issued to date 1158 official Bulletins, covering 4308 pages, and hundreds of individual letters; 843 Circulars covering 3195 pages have been sent to the Committee of Revision, and the correspondence in the General Chairman's office is extensive and constantly increasing.

Advisory Boards.—Because of unexpected developments early in the current Revision of the Pharmacopœia it was found necessary to obtain the advice of experts who were not members of the Committee of Revision, but who were willing to serve in an advisory capacity on special Boards. In each instance a member of the Committee of Revision has been made Chairman of the Board. When possible, a special expert of the Council on Pharmacy and Chemistry of the Ameican Medical Association was chosen as one of the members. All other members were selected because of their special knowledge of the subject and their national or even international recognition in the field. Each Board is made up of five members. These Boards are: the U. S. P. Vitamin Advisory Board, the U. S. P. Anti-anemia Preparations Advisory Board, the U. S. P. Endocrine and Hormone Advisory Board and the U. S. P. Sterile Products Advisory Board. The members of these Boards have served without remuneration and have received only their expenses in attending meetings, etc.

The U. S. P. Vitamin Advisory Board.—The first problem before this Board was the establishment of standards and adequate biological assay methods for Vitamins A and D, primarily for the assay of Cod Liver Oil.

A specially selected lot of Cod Liver Oil was made the "U. S. P. Reference Standard." Through the collaboration of about twenty laboratories in this country and abroad, the potency of this oil was established by comparison with the Vitamin A and Vitamin D standards of the Commission on Biological Standardization of the League of Nations. This "U. S. P. Reference Cod Liver Oil" has since been distributed not only in this country but in many European and Asiatic countries, for the purpose of standardizing Cod Liver Oil, Halibut Liver Oil, Percomorph Liver Oil, Viosterol and many other Vitamin A- and Vitamin D-containing substances. It has also been made the basis for the determination of the Vitamin A potency of fish-liver oils by the spectrophotometric method and for that purpose has been used throughout the world. The Board is now preparing a new lot of Cod Liver Oil to replace the original Reference Oil. A composite sample of authentic Cod Liver Oil has been secured from four of the most important producing centers and the potency of this new Oil is now being determined with the coöperation of fifteen biological laboratories.

More than 5000 packages of Reference Oil have been distributed from the office of the Revision Chairman within the last few years.

When the Pharmacopœia established its "U. S. P. Units" for Vitamin A and Vitamin D these immediately superseded the many other Vitamin A and Vitamin D units in use in this country and clarified the great uncertainty of values which these

varying unofficial units had created. The official biological assay methods for Vitamins A and D have also replaced all other methods and these have been perfected, through revision, in both the First and the Second U. S. P. XI Supplements.

The Vitamin Advisory Board has also been coöperating in extensive research into the spectrophotometric methods for Vitamin A determination, and it is hoped that this can be developed sufficiently to receive recognition in the official monograph of Cod Liver Oil in the U. S. P. XII.

The Vitamin Advisory Board has also directed studies over a period of about four years for assaying Vitamin B_1. Three such researches were directed by the Board in the selection of the most effective or efficient bio-assay method. Twenty-one biological laboratories have participated in these Vitamin B_1 studies, some of them conducting many assays and submitting their results in the collaborative studies. For several years the Pharmacopœia distributed a Vitamin B_1 Standard consisting of activated clay, identical in character and potency with the International Standard, but it has now prepared and is distributing a blend of synthetic Vitamin B_1, the potency of which has been determined by many biological laboratories in comparison with the original International Standard. This synthetic, crystalline, Vitamin B_1 Reference Standard for the U. S. P. has been proved to be identical in physical and chemical characteristics and also in its potency, with the new International crystalline standard. The Second U. S. P. XI Supplement has recognized this substance, "Crystalline Vitamin B_1," under the name "Thiamine Hydrochloride," and has made the biological assay method official.

The Vitamin Board has also had the coöperation of an auxiliary U. S. P. Vitamin Committee, composed of about one hundred and twenty-five vitamin experts in the United States and abroad. This Committee has held four meetings.

The U. S. P. Anti-Anemia Preparations Advisory Board.—This Board was created because the U. S. P. XI had introduced Liver Extract in powdered form and also as a purified solution for parenteral administration and these products most urgently needed standardization. There were no known chemical or biological assay methods for determining their potency and, therefore, the Pharmacopœia, with the aid of the members of this Advisory Board, undertook the evaluation of these through clinical results. Since it was not possible to establish Reference Standards and detailed assay procedures, as in the case of Vitamins, Digitalis, etc., an entirely new procedure was undertaken. Eminent authorities in the anti-anemia field volunteered to serve and manufacturers consented to submit their products, with clinical evidence of their value in the treatment of pernicious anemia. This Pharmacopœial Board set up its own standards of response in the formation of reticulocyte cells and red blood cell restoration, and made this the U. S. P. unit. The determination of value gave consideration to all clinical factors presented. In the few years since this Board was established practically all anti-anemia preparations from liver sold in the United States have been evaluated, and the Federal Food and Drug Administration will not permit the importation of any products of this type unless they have been approved and have been assigned a unit value by this Advisory Board.

The Endocrine and Hormone Advisory Board.—This Board was established because of the extensive development of hormones and the importance of their

standardization for medicinal use. None of these products has been given official recognition, but most of them have received international standardization, and this new Advisory Board has already provided a United States standard for estrone. This standard is now distributed by the Pharmacopœia, and standards for three other hormones are in the course of preparation. This Board will also assist in the establishment of standards for other hormones and endocrines as they become sufficiently important as medicinal substances. The group of experts composing the Board has also been serving in an advisory capacity for the Sub-Committee on Scope in the consideration of the inclusion of this class of products in the next Pharmacopœia.

The Sterile Products Advisory Board.—Several years ago the Food and Drug Administration called attention to the importance of providing Pharmacopœial standards for a number of substances used in surgical practice. The National Institute of Health, the American Medical Association, the American College of Surgeons, the American Hospital Association and a number of other organizations interested in surgical practice also urged Pharmacopœial standardization of this class of important medicinal aids. In order that the Pharmacopœia might meet this demand, an additional Advisory Board of experts was appointed. This Board enlisted the aid of all of the organizations already named, and also invited recommendations from the Surgeons General of the Army, Navy and Public Health Service and from the manufacturers of surgical cotton or sutures, and also from the producers of other surgical products. After several conferences of the Board, the standardization of Surgical Gut and the determination of its sterility, and the standardization of Surgical Cotton, both for sterility and fiber length, were made official in the "Second U. S. P. XI Supplement." The Board is continuing its study of such products as Surgical Gauze, Bandages, First Aid Dressings, Adhesive Plaster, etc., and it is expected that Pharmacopœial monographs covering this group of preparations will be ready for inclusion in the next Pharmacopœia. This Board will also assist the Pharmacopœia in establishing the standards for other sterile products such as those suitable for parenteral administration.

Digitalis Investigation.—During this decade three separate studies of Digitalis, with respect to its storage, deterioration and assay have been started and are still under way. Under the supervision of Dr. C. W. Edmunds, Chairman of the Sub-Committee on Biological Assays, the new U. S. P. Reference Standard for Digitalis, which is identical in potency with the International Standard, was established. Many comparative assays were conducted and more than a year was required for final determinations.

A second extensive study of both the assay and a revised Pharmacopœial Reference Standard is now being promoted actively under the direction of Dr. E. E. Nelson, who has been requested by Dr. Edmunds to direct the investigation. About fifteen pharmacological laboratories are participating in this study, which involves the technique of the assay and the development of additional Reference Standard material. It is believed that this will require at least another year for completion.

The third Digitalis investigation involves elaborate clinical studies under the supervision of Dr. Henry A. Christian, and also bio-assay studies. In this study, 36 noted specialists in cardiac disease, and 25 pharmacologists are co-

operating. In this investigation, 200,000 tablets and about 7000 bottles of Tincture of Digitalis have been provided by the Pharmacopœia.

Reference Standards.—Prior to 1931, the reference standards then required were furnished without charge by the Food and Drug Administration. The rapid developments in the field of standardization, which required reference standards, made it necessary for the U. S. P. Board of Trustees to arrange to provide these standards and to distribute them.

In addition to the reference standards already mentioned, namely, Vitamin A, Vitamin D, Vitamin B_1 and Estrone, the Pharmacopœia has prepared and is distributing reference standards for use in official biological assays of Digitalis, Ergot, Posterior Pituitary, Strophanthin, Pepsin, Epinephrine and Aconite. This service of the Pharmacopœia has been made possible through the assistance of various Sub-Committees and technical experts associated with the Government or with industrial organizations, and, with the exception of Estrone, the Pharmacopœia has purchased all of the materials and paid for the researches and standardization procedures necessary in preparing the standards. These standards have been used extensively in this country and in some foreign countries in research, and especially in standardizing and evaluating official and many unofficial medicinal products.

During the past few years the Pharmacopœia has distributed a total of 2496 packages of reference standards, in addition to the more than 5000 packages of Vitamin A and D standards mentioned before. All of these reference standards are stored under suitable preservation conditions and are shipped, stored and billed from the office of the Chairman of the Committee of Revision. The expense involved in carrying out this important new service has been covered by the returns.

Revision Publicity and Public Hearings.—In addition to the publication of abstracts of revision changes in the pharmaceutical press, as recommended by the Convention, a new feature has been established during the past few years which has proved important and valuable. In addition to receiving the assistance and advice in almost every phase of Pharmacopœial revision, from laboratories connected with the Government, from colleges and universities, and industrial organizations both through correspondence and conferences, the Pharmacopœial Committee has adopted the policy of holding public hearings.

When proposed U. S. P. monographs have reached the stage of page proof, these page proofs are widely distributed, and without charge, to those who have demonstrated their interest in the Revision, and a date is announced when all who are interested are invited to appear at a public hearing in Washington to discuss details of the proposed standards.

The Chairmen of the Sub-Committees responsible for the monographs being revised are also invited to be present and they answer questions or explain proposed standards and consider recommendations made by those in attendance.

All proposals and discussions are stenographically recorded and those who desire to submit specific proposals are asked to do so in writing.

The members of the Executive Committee also hold conferences with the officials of the Food and Drug Administration and the Public Health Service on the day following the public hearings, and obtain their suggestions and advice concerning the proposed new Pharmacopœial standards. Following these confer-

ences, the members of the Committee give final consideration to every factor and decide the details of the new Pharmacopœial monographs.

Extending Pharmacopœial Information.—Early in the U. S. P. XI program the Board of Trustees recognized the importance of establishing a systematic procedure for extending information to physicians and pharmacists concerning the use and application of the Pharmacopœia. A special Pharmacopœial Committee, consisting of three pharmacists and three physicians, was appointed. This committee enlisted the coöperation of the A. M. A. officials and one of their joint activities was the securing and publishing, in the *Journal of the American Medical Association*, of twenty-nine articles written by clinical experts and dealing with the treatment of specific diseases in which the drug requirements have been especially considered. The authors selected to write these articles were all clinical experts with national or international reputations and their articles were widely accepted as authoritative. After their original publication in the *A. M. A. Journal*, these articles were distributed as reprints to a large group of physicians, interns and pharmacists, and used in teaching therapeutic practice. The authors of these articles were not asked to confine their recommendations to U. S. P. or N. F. products, but were given complete freedom to indicate the most important of known medicines in the treatment of the diseases under consideration. This test has largely confirmed the completeness of the Pharmacopœial lists by their suggesting 83 per cent of official medicines and 17 per cent of unofficial items. As has already been indicated, the medicinal products which are not now official but which have been named by these physicians, are being considered for possible adoption in the next U. S. P.

This program has been so well received that nineteen additional articles have been secured and will appear in the *A. M. A. Journal* during the coming year.

The first series of 24 A. M. A. articles referred to above, and which appeared under the caption, "The Pharmacopœia and the Physician," are now being issued in book form by the American Medical Association as one of their series of publications. They have also been translated into Spanish, with the aid of the Pan American Sanitary Bureau, and have appeared in the Bulletin of the Bureau, which is sent to about 10,000 physicians and pharmacists in the 20 republics of Central and South America. These articles, in Spanish, will also soon be available in book form, as published by the U. S. P. Board of Trustees.

The special Pharmacopœial Committee on Extending Pharmacopœial Information has also sponsored the placing of exhibits in many medical and pharmaceutical conventions. In these exhibits the value and use of official medicines have been emphasized.

Preservation of Medicinal Products.—The Pharmacopœia has for a number of decades directed the methods for the packaging and storage of a number of the official products. These official directions have been based upon the practical experience of manufacturers, distributors and dispensers of medicines, and also upon special investigations conducted over a number of years and in which the Pharmacopœia assisted financially.

When the new Food, Drug and Cosmetic Act was passed in 1938, it included among its provisions the enforcement of the packaging requirements established by the Pharmacopœia. Knowing that this feature was proposed for the new law,

a special U. S. P. Committee, made up chiefly of Chairmen of Sub-Committees, was established about five years ago and has made a special study of every packaging and storage specification for the U. S. P. XI. Every requirement is again under review and into the study have been brought officials of the Food and Drug Administration, the U. S. Bureau of Standards, manufacturers and packaging experts.

It is also necessary for the Pharmacopœia in the near future to define much more specifically the meaning of the terms used in U. S. P. requirements. For instance, in the requirement that a "tightly-closed" container shall be employed in packaging certain chemicals or drugs which are readily susceptible to atmospheric influence, either by deliquescence or efflorescence or perhaps oxidation, the meaning of such a term must be specifically defined and testing methods devised. This program is now actively under way.

International Pharmacopœial Relations.—Both the U. S. P. X and the U. S. P. XI were greatly assisted through having the use of International Standards. The present Pharmacopœia has duplicated most of these for distribution within the United States.

Very intimate and valuable relations have been maintained with the British Pharmacopœial Commission, both organizations sharing their researches and conferring on many questions. It is expected that the new British Pharmacopœia and the U. S. P. XII will appear at approximately the same time and will establish even more completely identical nomenclature and standards for most of their official products.

Within the last two years the League of Nations has appointed and financed the expenses of an International Commission of Pharmacopœial Experts. This group, representing Great Britain, Switzerland, France, Denmark, Holland, Belgium and the United States, has held two meetings in Geneva, and already has prepared about 100 texts for possible international adoption. The work of this Commission is progressing energetically and when about 300 of the most important therapeutic agents commonly used throughout the world have been described and standardized, these will be offered to all nations of the world as suggestions for adoption within their own Pharmacopœias. The United States representative on this International Commission is the present Chairman of the U. S. P. Revision Committee.

The Spanish Edition of the U. S. P. XI.—Following the precedent of three decades, the Board of Trustees published the U. S. P. XI in Spanish. The Pharmacopœia was especially fortunate in securing the enthusiastic coöperation on this translation of the experts of the Pan American Sanitary Bureau, at Washington. These translators called into council the pharmacists of Cuba who had been responsible for previous translations, and also obtained the coöperation of the Auxiliary Pharmacopœial Commissions of Porto Rico and the Philippines.

The publication, in Spanish, of the articles on "The Pharmacopœia and the Physician" still further assisted in introducing the U. S. P. XI in Spanish into Central and South American countries, with the result that Costa Rica, Cuba, the Dominican Republic, Nicaragua and Panama have adopted the United States Pharmacopœia as their official medical authority, and Argentina, Bolivia, Chile, Columbia, Ecuador, Honduras, Peru and Uruguay have this action under con-

sideration. At the last meeting of the Pan American Sanitary Congress a resolution was passed urging the republics of Central and South America which did not already have their own Pharmacopœias to take advantage of the opportunity for uniformity in medicinal standards in Pan American countries by adopting the U. S. P. XI as their Pharmacopœia.

The U. S. P. Supplements.—When the Pharmacopœial standards were made an important part of the new Federal Food, Drug and Cosmetic Act, and the enforcement of the Act extended to additional features, such as packaging, through a greatly enlarged enforcement organization, it became necessary for the Pharmacopœia to adopt a policy which would make it possible to revise standards promptly if found necessary, and make official the important new medicinal agents developed between decennial revisions.

A new feature of the Federal Food, Drug and Cosmetic Act directs the Secretary of Agriculture to call the attention of the Pharmacopœial Committee to any existing U. S. P. standards which require revision, or are believed to be inadequate, and to allow a reasonable time for their revision. The act, however, further provides that should the Pharmacopœia not comply with this request within a reasonable time the Secretary of Agriculture must prepare governmental standards. This situation has been met by utilizing the authority granted by the 1930 Convention to issue revised texts or Supplements whenever this was believed necessary. When the need for revision was urgent, as when products could not be imported because of unsatisfactory standards, the Pharmacopœia issued "Interim Revision Announcements," such Announcements being accepted as official revisions. However, to give such Interim Revision Announcements permanent form, or to revise other monographs which have been found to be unsatisfactory, and, still more important, to give official recognition to new therapeutic agents the importance of which have made Pharmacopœial recognition desirable, Supplements have been issued. In these Supplements the entire revised monographs have been copied with the sections which have been altered distinctly marked and indicated as superseding the text of the original U. S. P. XI.

In the recently published Second U. S. P. XI Supplement a Cumulative Pharmacopœial Index has been provided which indicates the location of all official monographs. Most of the official texts are still to be found in the original U. S. P. XI. Seventy-eight monographs were revised and published in the First U. S. P. XI Supplement, while the Second Supplement carries eighty-six revised texts, thirteen new monographs and numerous general tests, reagents, etc.

While the main advantage of the U. S. P. Supplements is to keep Pharmacopœial standards in conformity with the latest scientific developments, yet one of their greatest advantages is the fact that monographs can be thoroughly studied and revised and a satisfactory text obtained before the necessity of publication. Under the old decennial revision method, when the Pharmacopœia went to press on a given date, every monograph had to be printed whether or not its revision was satisfactorily completed.

U. S. P. Finances.—The entire cost of revision, including every phase of the work, has averaged $19,162.07 per year. The total for nine years is $172,458.64, of which $27,015.06 was for research alone. The balance covers honoraria, clerical assistance, postage, telegrams, meetings, etc., for the period. These costs would

have been multiplied many times had it not been for the contributions, without charge, of laboratory and office facilities by colleges, universities, industrial organizations, private laboratories and the Government. Another tremendous cost has been avoided through the voluntary service in the direction of revision work, by outstanding physicians, pharmacists and other scientists of this country, many of these collaborators having served throughout the entire period of revision. Members of the Revision Committee have received modest honoraria, in no instance averaging more than $100.00 per year.

Research studies of assay methods in the vitamin field, in the establishment of standards for Thyroid, Nitroglycerin, Digitalis, Ergot, Hyoscyamus, and for the solution of many other difficult Pharmacopœial problems have alone been possible because of help rendered by voluntary assistance, often at a considerable cost to those who have participated. This situation is most gratifying and satisfactory and reflects the fine professional spirit of those who have coöperated in perfecting the official standards.

By the maintenance of this policy it is believed that the Pharmacopœia will always be able to secure the guidance and advice of the most eminent scientists in this country and abroad. Such services could not be purchased, but are willingly given voluntarily.

Prior to this decade, it had been customary to have an annual audit of the accounts of the Pharmacopœia by members of the Board of Trustees and a decennial audit by an outside auditor. The developments referred to in this statement made it apparent that a complete annual audit was required and this was arranged.

The necessary extension of the revision program has required increased expenditures. Fortunately the contract for printing and distributing the U. S. P. XI and the two Supplements resulted in a considerable reduction in cost and an increase in return. As a consequence, the Pharmacopœia during this period has operated within its income without drawing on its reserve.

November 20, 1939.

In an effort to curb the practice of manufacturers who make a point of selling drug products to their employees, Mr. Douglas Hunt, president of the Wisconsin Pharmaceutical Association, announced recently that druggists throughout the state have been urged to contact the association's headquarters in the event that they know of manufacturers selling drug products to their employees. Mr. Hunt pointed out that the laws of 1939, chapter 129, state: "Prohibit the sale by manufacturers to employees or other persons of products not of its own manufacture, production or handled in its regular course of trade."

"We believe that this law forbids the sale of drug products by manufacturers to their employees." Mr. Hunt said, "our Association will endeavor to enforce this law for your pharmacy."

Taken from a bulletin of the West Virginia State Pharmaceutical Association: "We know of at least one member of the ASSOCIATION who requires that his registered pharmacists be members of the state association and the AMERICAN PHARMACEUTICAL ASSOCIATION. He states that 'I am not offering employment to any man in my prescription department who is not interested in these organizations and willing to support them.'"

A FINANCIAL STATEMENT COVERING THE RECEIPTS AND EXPENSES OF THE FIRST NINE YEARS OF THE U. S. PHARMACOPŒIAL DECENNIAL PERIOD—APRIL 15, 1930 TO APRIL 30, 1939

A financial statement, indicating the receipts and expenditures of the United States Pharmacopœial Convention for the first nine years of the Eleventh Revision period, April 15, 1930, to April 30, 1939, is herewith submitted by the U. S. P. Board of Trustees.

This is being forwarded as a report to the delegates of the 1930 Pharmacopœial Convention and will also be sent to delegates appointed to the 1940 Convention, that they may have information concerning Pharmacopœial Revision finances.

A final financial statement covering the entire decade will be submitted by the Treasurer of the Convention as a part of the regular order of business on the first day of the 1940 Convention. Such a statement has always been submitted at previous Conventions.

For the U. S. P. Convention,
SAMUEL L. HILTON, *Treasurer.*

For the U. S. P. Board of Trustees,
JAMES H. BEAL, *Chairman*, SAMUEL C. HENRY, *Secretary.*

FINANCIAL STATEMENT OF THE UNITED STATES PHARMACOPŒIAL CONVENTION.

BALANCE SHEET AS OF APRIL 30, 1939.

(Giving effect to inventories and par value of investments.)

ASSETS.

Cash:		
Demand deposits	$ 18,836.88	
Revolving Fund	1,000.00	$ 19,836.88
Accrued interest receivable on investments	$ 799.69	
Accounts receivable, due from sales of Pharmacopœias	1,604.16	
Accounts receivable, due from sales of reference standards, A. M. A. articles, etc	339.50	2,743.35
Investments (par value):		
$43,000 H. O. L. C. 3 per cent bonds	$ 43,000.00	
$15,000 U. S. Treasury 2¼ per cent bonds	15,000.00	
*$20,000 U. S. Treasury 1⅛ per cent notes	20,000.00	78,000.00
Inventories:		
Publications and binders (see Schedule 1)	$ 16,115.58	
Revision Chairman's furnishings and equipment	1,326.44	
Revision Chairman's stationery supplies	370.00	
"The Pharmacopœia and the Physician" reprints	180.00	
Reference Standards (cost of materials without allowance for research or conference costs)	2,130.00	20,122.02
Premium paid on Investments		1,525.00
Total Assets		$122,227.25

NET WORTH.

†Net Worth, April 15, 1930	$121,696.83	
Increase in Net Worth, nine-year period (as per Income and Expense Statement)	530.42	
		122,227.25

* These securities include the principal of the "Remington Research Fund" of $20,000.00.

† The net worth of $110,726.08 reported as of April 15, 1930, did not include certain assets valued at that time at $10,970.75 (see U. S. P. Convention Proceedings, page 58). The net worth has accordingly been adjusted to include this amount.

INCOME AND EXPENSE STATEMENT—APRIL 15, 1930, TO APRIL 30, 1939.

GENERAL ACCOUNT.

INCOME:			
Sale of English and Spanish Editions of U. S. P. X and XI and the first U. S. P. XI Supplement		$230,326.04	
Sale of Reference Standards and A. M. A. articles		14,081.93	
Interest on Investments		22,804.83	
Use of U. S. P. Text by authors of other books		4,855.00	
Miscellaneous income		1,180.28	
Gross income			$273,248.08
EXPENSES:			
PUBLICATION EXPENSES.			
Cost of Composition, Printing and Binding (Covering the U. S. P. XI English and Spanish Editions and the First U. S. P. XI Supplement)		$ 77,584.19	
Less increase in value of inventory:			
April 30, 1939 inventory	$16,115.58		
April 15, 1930 inventory	7,300.88		
		8,814.70	
Cost of publications sold		$ 68,769.49	
ADMINISTRATION EXPENSES.			
Meetings of the Board of Trustees	$ 4,818.96		
Clerical	13,650.00		
Supplies	1,119.75		
Postage and telegrams	290.00		
General expense (less cost of furnishings and equipment)	1,700.13		
Honoraria	1,800.00	$ 23,378.84*	
MISCELLANEOUS EXPENSES.			
1930 Convention Expenses		$ 3,726.18	
Sundry disbursements under the Remington Research Fund		5,319.11†	
Cost of acquiring and disposing of investments		1,375.40	
REVISION EXPENSES.			
See details in appended Notes. Page No.			
3 .....1—Meetings	$17,075.38		
3 .....2—Clerical	34,870.81		
4 .....3—Supplies	13,997.28		
4 .....4—Postage and telegrams	6,308.84		
4 .....5—General expenses	22,572.37		
5 .....6—Honoraria	48,323.90		
6 .....7—Research appropriations†	27,000.06†	$170,148.64‡	
Total expenses			$272,717.66
Net gain for the period			$ 530.42

* Average yearly cost for Administration, $2597.65.

† For research—from Revision Expenses, $27,000.06, from Remington Fund, $5319.11—Total $32,319.17.

‡ Average yearly cost of U. S. P. Revision from April 15, 1930, to April 30, 1939, $18,905.40.

SCHEDULE NO. 1—INVENTORY OF PUBLICATIONS, SUPPLEMENTS AND BINDERS ON HAND APRIL 30, 1939.

5085 volumes U. S. P. XI, English Edition, bound in buckram, cost $.97597 each	$ 4,962.81
5000 volumes U. S. P. XI, English Edition, unbound, cost $.50847 each	2,542.35
9 volumes U. S. P. XI, English Edition, leather bound, cost $2.71 each	24.39
1153 volumes U. S. P. XI, Spanish Edition, bound, cost $5.3315 each	6,147.22
1334 First U. S. P. XI Supplement (second printing), bound, cost $.4735 each	631.65
2118 First U. S. P. XI Supplement (second printing), unbound, cost $.238 each	504.08
713 Supplement binders, cost $1.16 each	827.08
Translation of "Pharmacopœia and Physician" articles into Spanish	476.00
Total	$16,115.58

A More Detailed and Supplementary Financial Statement of the Revision Expenses of The United States Pharmacopœial Convention, Inc.*

NOTE 1.—MEETINGS OF THE GENERAL AND EXECUTIVE COMMITTEES OF REVISION, AND OF SUB-COMMITTEES, SPECIAL CONFERENCE GROUPS, ETC.

From May 1, 1930, to April 30, 1939.

First General Committee Conference (1931)	$ 4,199.74
Second General Committee Conference (1933)	4,465.65
Sub-Committee on Scope Conference	1,335.60
First Supplement Public Hearing	630.51
Executive Committee Meeting (1938)	994.27
Traveling, hotel, and incidental expenses, during nine years, of the General Revision Chairman, for conferences with Sub-committee Chairmen, sub-committee groups, Food and Drug Officials, and others assisting in the Revision (Annual average $382.71)	3,444.42
Public Vitamin Conferences	2,005.19
Total	$17,075.38

NOTE 2.—CLERICAL, EDITORIAL AND TECHNICAL ASSISTANCE TO THE GENERAL REVISION CHAIRMAN.

From May 1, 1930, to April 30, 1939.

Secretarial and stenographic assistance	$29,930.17
Editorial and technical assistance	4,940.64

In preparing manuscript, proofreading, handling return proofs, control of "Reference Standards," aid in Pharmacopœial exhibits, etc., the following assisted and were paid as indicated:

Wm. Batt	$ 1.50
H. R. Boggs	7.50
F. Brockman	19.00
D. Butz	8.00
H. P. Frank	541.09
Mr. L. Lorand	75.00
J. N. McDonnell	14.50

* NOTE: The detailed and classified lists of expenses which follow, numbered from 1 to 7 under "Revision," summarize all itemized bills for revision expenditures as authorized by the Board of Trustees and approved for payment by Chairman Cook up to April 30, 1939.

E. H. McLaughlin	11.00	
A. B. Nichols	1,610.14	
A. Osol	20 03	
C. Perkins	26.50	
C. C. Pines	12.00	
W. Reuning	57.00	
G. Savitz	235.37	
R. Schrey	329.01	
W. Sechrist	1,823.30	
L. F. Tice	15.00	
Mrs. Watts	134.70	
	$4,940.64	
Total		$34,870.81

NOTE 3.—SUPPLIES.

From May 1, 1930, to April 30, 1939.

Stationery for the General Chairman and for all members of the Committee of Revision		$ 2,033.62
Binders for all official circulars and correspondence		1,136.19
Mimeograph supplies (paper, for circulars, stencils, ink and maintenance)		3,197.49
Secretarial supplies for General Chairman's office		2,460.63
Sub-committee supplies, clerical help, etc., as follows		5,169.35
1. Scope	$ 11.00	
2. Therapeutics	30.14	
3. Biological Assays	56.59	
4. Biological Products	.....	
5. Botany and Pharmacognosy	157.03	
6. Proximate Assays	831.13	
7. Inorganic Chemicals	1,511.43	
8. Organic Chemicals	2,003.41	
9. Reagents, etc	120.56	
10. Volatile Oils	98.88	
11. Extracts, Fluidextracts, etc	88.65	
12. Waters, Solutions, Syrups, etc	91.07	
13. Ointments, etc	127.69	
14. Tables, etc	.....	
15. Nomenclature	41.77	
	$5,169.35	
Total		$13,997.28

NOTE 4.—POSTAGE AND TELEGRAMS.

From May 1, 1930, to April 30, 1939.

Postage and telegrams	$6,308.84

NOTE 5.—GENERAL EXPENSES.

From May 1, 1930, to April 30, 1939.

Translating the U. S. P. XI into Spanish	$ 2,006.00
Contributions to the A. PH. A. toward an Abstract of Pharmacopœial Literature	9,000.00
Reproducing and distributing abstracts of U. S. P. literature for 8 years as supplied free by E. R. Squibb and Sons	2,345.12
U. S. P. Exhibits at the Annual A. M. A. Conventions	1,451.74

Extending U. S. P. information to physicians by many exhibits (other than A. M. A.); by publishing 3500 sets of A. M. A. reprints of the First "Pharmacopœia and Physician" Series and by other publicity programs, less $180.00 inventory of A. M. A. articles. (NOTE: This cost is reduced by the $2570.06 received to May 1939, from sales of the A. M. A. reprints as listed among "Receipts" in this report)	4,199.85
Rent for Chairman's secretary's office and storage space for U. S. P. property, at 7th and Race Streets, from May 1930 to October 1934	1,645.00
Offices, light and heat for Chairman Cook and U. S. P. Secretaries at the Philadelphia College of Pharmacy and Science from May 1930 to April 30, 1939, and for storage space for U. S. P. property since October 1934	no charge
A part of the cost of the U. S. P. "Reference Standards" including Vitamins A, D and B_1, Posterior Pituitary, Epinephrine, Ergot, Digitalis, Pepsin, Aconite and Ouabain, less $2130 inventory of Reference Standards. (NOTE: See "Research Appropriations" for the balance of this expense.)	64.50
Dues for Membership in National Council on Pharmaceutical Research	225.00
Publication of Abstracts of U. S. P. changes	311.25
Various Interim Revision Announcements	45.60
Cod Liver Oil Assay reprints	59.15
Taking inventory of U. S. P. property, Washington, D. C.	31.54
Three typewriters in Chairman's office, also files	429.41
Mimeograph machine in Chairman's office	385.00
Miscellaneous expenses of General Chairman's office	373.21
Total	$22,572.37

NOTE 6.—HONORARIA.

From May 1, 1930 to April 30, 1939.

Chairman Cook (at $300.00 per month)		$32,250.00
Revision Committee Members as follows		14,100.00
Henry V. Arny	$ 300.00	
Walter A. Bastedo	200.00	
George D. Beal	1,000.00	
E. J. G. Beardsley	100.00	
Oscar W. Bethea	200.00	
Francis E. Bibbins	200.00	
A. Richard Bliss	200.00	
Theodore J. Bradley	200.00	
Charles L. Brown	100.00	
Mortimer Bye	100.00	
Charles E. Caspari	100.00	
B. V. Christensen	100.00	
Henry A. Christian	750.00	
W. G. Crockett	200.00	
Edward D. Davy	200.00	
Marion S. Dooley	100.00	
A. G. DuMez	600.00	
C. W. Edmunds	750.00	
Bernard Fantus	200.00	
E. N. Gathercoal	200.00	
W. F. Gidley	50.00	
Loyd E. Harris	100.00	
L. D. Havenhill	200.00	
Arthur D. Hirschfelder	100.00	
Reid Hunt	500.00	

C. W. Johnson	100.00	
C. B. Jordan	750.00	
John C. Krantz	1,000.00	
Edward H. Kraus	100.00	
H. A. Langenhan	500.00	
J. Leon Lascoff	100.00	
Charles H. LaWall	300.00	
Townes R. Leigh	100.00	
Ernest Little	400.00	
George W. McCoy	500.00	
Hugh C. Muldoon	100.00	
C. E. Nelson	100.00	
E. E. Nelson	200.00	
Edwin L. Newcomb	400.00	
Joseph Rosin	500.00	
George B. Roth	100.00	
Wilbur L. Scoville	500.00	
Leonard A. Seltzer	500.00	
Earl R. Serles	100.00	
Virgil E. Simpson	100.00	
Isaac Starr	100.00	
A. L. Tatum	100.00	
Frank P. Underhill	100.00	
C. B. Wood	100.00	
H. C. Wood	200.00	
Heber W. Youngken	300.00	
Honorarium to Dr. E. E. Nelson (Ergot Investigation)		200.00
Honoraria to authors of articles in "The Pharmacopœia and Physician" Series (for clerical and stenographic assistance)		1,773.90
Total		$48,323.90

NOTE 7.—RESEARCH APPROPRIATIONS.

From May 1, 1930, to April 30, 1939.

Standards for Color Nomenclature			$ 1,348.90
(A. Ph. A. Fellowship for Kenneth L. Kelly		$750.00	
and Studies under direction of Prof. E. N. Gathercoal		598.90)	
Dues for Membership in Color Council			150.00
Sub-Committee Research Assistance as follows			19,782.15
6—*Proximate Assays:*			
Dr. G. DeKay	$1,300.00		
Dr. A. Hayden	1,500.00		
Dr. A. Viehoever	200.00		
Mr. Kauffman	150.00		
Mr. L. Tice	40.00	$3,190.00*	
7—*Inorganic Chemicals:*			
Dr. J. Carr	$2,250.00		
Dr. J. Schmidt	350.00		
Prof. L. Tice	20.00		
Dr. A. Osol	7.50		
Dr. F. K. Bell	3,766.65	$6,394.15*	

* See Footnote page 1018.

8—Organic Chemicals:		
Dr. C. Szalkowski	$5,128.10	
Dr. M. W. Green	2,941.67	
Miss Elinor Sackter	1,558.33†	$9,628.10*
10—Volatile Oils:		
Dr. A. Osol	$ 150.00	
Prof. L. Tice	45.00	
Mr. Uranson	15.00	$ 210.00*
12—Waters, Solutions, etc.:		
Mr. E. E. Johnson	$ 342.40	
Mr. C. E. Evans	8.50	
Mr. A. Poole	9.00	$ 359.90*
Prescription Survey to assist in Scope Decisions (under the direction of Prof. E. N. Gathercoal)		419.88
Study of Preservation and Packaging Requirements for U. S. P. Chemicals (under the direction of Prof. H. V. Arny)		500.00
Digitalis Clinical and Biological Research (under the direction of Dr. Henry A. Christian)		235.02
Expenses for Anti-Anemia Standardization program		1,289.27
Expenses for U. S. P. Sterile Products Board		151.65
Special Investigation of Solution of Magnesium Citrate standards—by Profs. A. Osol and L. F. Tice		70.00
Pharmacological study of digitalis		742.23
Portion of the cost of U. S. P. "Reference Standards" to be classified under research (see General Expenses for the balance of this expense)		2,310.96
Total from the U. S. P. General Fund		$27,000.06

* The Colleges and Institutions where Sub-Committee Chairmen were affiliated have contributed office and laboratory facilities without charge to the U. S. P.

† The check drawn to Mellon Institute, to be paid out for U. S. P. assistant when due, includes Miss Sackter's salary to April 30, 1939, the balance being held for subsequent salaries for the U. S. P. assistant.

LAIRD J. STABLER.

The passing of Dean Stabler leaves a void that cannot be filled. His name is known and loved by thousands of men and women now scattered throughout the United States, filling high and important places in the field of Pharmacy and Oil Technology. They learned from him. His service to the youth of California was not only in the knowledge he imparted but in the contact with his original mind and kindly interest which stimulated them to greater achievement in their profession.

As Dean and Builder of our college his keen insight into character enabled him to bring out the best in those under his direction and to influence them to greater usefulness in their daily lives. Much of the success which he achieved was due to his unselfishness in the promotion of the welfare of others.

His life is woven in the American pattern. As a citizen, Dr. Stabler took an active interest in the affairs of the community, as well as the state and nation. He gave liberally of his time and learning in support of legislation both State and Federal, for the betterment of conditions in the field of Pharmacy. His inventive genius was productive of usefulness and the results of many of his discoveries are being extensively used. And yet their very nature impels in us the feeling that is not beyond our ability to achieve along these lines in the future, as he has done in the past.

Unassuming, kindly, always ready to lend a listening ear and a helping hand Dean Stabler will be universally mourned and long remembered by all who knew him.

SECTIONS

BOARD OF REVIEW OF PAPERS (SCIENTIFIC SECTION).—*Chairman*, F. E. Bibbins; H. M. Burlage, J. L. Powers, E. V. Lynn, C. O. Lee, L. W Rising, L. W. Rowe, Heber W. Youngken, Ralph E. Terry, Carl J. Klemme.

ERYTHRINA ALKALOIDS. V. COMPARATIVE CURARE-LIKE POTENCIES OF SPECIES OF THE GENUS ERYTHRINA.*

BY KARL FOLKERS AND KLAUS UNNA.

In a recent paper (1), an historical review was made of the alkaloids of species of *Erythrina*, and data were presented showing in twenty-six species the presence of alkaloids which caused a curare-like action in the frog. This number of twenty-six species was reduced to twenty-three when the recent taxonomic revision of *Erythrina* by Mr. B. A. Krukoff (2, 3) was applied. The species' names used in this present paper are in full accord with his treatment of the genus.

This paper presents the data on the assay of twenty-eight additional species of *Erythrina*, and represents a total of fifty-one tested species out of the one hundred and five known species. For a great majority of the samples the identity of the *Erythrina* seeds used in these studies was established by accompanying herbarium material, and for the rest of the samples by other evidence which left no doubt regarding the identity.

The significant data on the twenty-eight additional species as well as new data on previously examined species are presented in Table I. Species from nearly every tropical and sub-tropical part of the world were examined. Most of the seeds were collected within the last three years and the same numbers were assigned to both the seed samples and to the botanical specimens taken from the same plants as the seeds. In most cases, a quantity of one to three Gm. of seeds

TABLE I.—DATA ON SPECIES OF ERYTHRINA.

Name of Plant.	Collectors' and Specimen Numbers. Names		Amount Gm. Seeds.	Fatty Fraction %	Ethanol Extractives %	Water Added Ml.	Threshold Dose Ml./Kg.	Paralysis Potency Value Gm. Frog/1 Gm. Seed.
E. fusca Lour.	(Buitenzorg)	9146	2.1067	7.2	14.8	1.0	0.05	9,500
E. fusca Lour.	(Buitenzorg)	9149	1.7112	8.9	14.1	1.0	0.05	11,700
E. glauca Willd.	Roig	9214	3.0018	6.6	15.2	20.0	0.2	33,300
E. glauca Willd.	Dugand	9203	3.0006	7.9	14.9	20.0	0.2	33,300
E. glauca Willd.	Haigh	9170	3.0014	10.4	14.0	20.0	0.2	33,300
E. glauca Willd.	Janz[1]	9343	3.0001	9.6	19.0	20.0	0.4	16,650
E. velutina Willd.	Walmsley	9211	3.0119	3.5	16.5	20.0	0.2	33,300
E. velutina Willd.	Gomez Parente	9169	3.0034	9.0	14.5	20.0	0.2	33,300
E. velutina Willd.	Krug[2]	9196	3.0001	7.6	15.6	20.0	1.5	4,400
E. velutina Willd.	Vasconcellos Sobrinho	9263	3.0000	8.6	17.0	20.0	0.4	16,650
E. velutina forma *aurantiaca* (Ridl.) Kruk.	Dias da Rocha	9272	3.0000	11.0	15.4	20.0	0.6	11,100
E. Grisebachii Urb.	Walsingham	9316	3.0000	10.3	16.3	20.0	0.8	8,300
E. crista-galli L.	Meyer	9212	3.0017	10.7	20.9	20.0	0.08	83,300
E. arborescens Roxb.	Sayeeduddin	9225	3.0001	14.2	19.4	20.0	0.1	66,600
E. speciosa Andr.	(undesignated)	9232	3.0000	9.2	13.1	20.0	1.0	6,600
E. edulis Triana	Robledo	9231	20.0	0.6	13.6	100.0	5.0	1,000
E. cubensis C. Wright	Acuna	9234	3.0008	13.3	16.9	20.0	0.2	33,300

* From the Research Laboratory of Merck & Co., Inc., and the Merck Institute of Therapeutic Research, Rahway, N. J.

TABLE I.—DATA ON SPECIES OF ERYTHRINA. (*Continued from page 1019.*)

Name of Plant.	Collectors' Names and Specimen Numbers.		Amount Gm. Seeds.	Fatty Fraction %.	Ethanol Extractives %.	Added Ml.	Threshold Dose Ml./Kg.	Paralysis Potency Value Gm. Frog/1 Gm. Seed.
E. Standleyana Kruk.	Acuna	9235	3.0006	14.9	13.7	20.0	0.6	11,100
E. mysorensis Gamble	Sutton	9270	10.0001	11.3	11.2	50.0	>40.0	<125
E. pallida Britton & Rose	Wortley	9257	3 0003	11.8	12.2	20.0	0.3	22,200
E. abyssinica Lam.	Louis	9259/5928	3.0000	14.8	16.4	20.0	0.6	11,100
E. sigmoidea Hua (?)	(Bur. Econ. Fr. Guin.)	9275	3.0003	9.8	13.8	20.0	0.15	44,400
E. orophila Ghesq.	Louis	9357	4.1444	16.2	14.1	27.6	0.8	8,300
E. falcata Benth.	Santini	9274	3.0005	9.3	18.0	20.0	0.6	11,100
E. suberosa Roxb.	Dorasami	9281	3.0001	6.3	19.0	20.0	0.08	83,300
E. Parcellii Bull.	Dorasami	9280	10.0000	9.9	12.4	50.0	10.0	500
E. stricta Roxb.	Ghose	9289	3.0001	12.2	20.4	20.0	0.3	22,200
E. stricta Roxb.	Biswas[3]	9290	3.0007	10.5	17.7	20.0	20.0	330
E. stricta Roxb.	Biswas[3]	9290	3.0002	10.4	18.0	20.0	10.0	660
E. stricta Roxb.	Broadfoot	9341	3.0012	8.0	19.9	20.0	0.2	33,300
E. stricta Roxb.	Bor	9335	3.0000	8.2	20.6	20.0	0.2	33,300
E. altissima A. Chev.	(Serv. For. Cote D'Ivoire)	9291	3.0003	8.9	20.0	20.0	1.0	6,600
E. glabrescens R. N. Parker	Bor	9334	3.0005	11.4	19.0	20.0	0.2	33,300
E. excelsa Baker	Thomas	9342	3.0005	9.0	24.0	20.0	0.2	33,300
E. americana Mill.	Mexia	9394/9022a	3.0001	9.1	17.0	20.0	1.0	6,600
E. breviflora forma *petraea* (Brand.) Kruk.	(undesignated)[4]	9397	2.8210	15.1	20.7	18.8	0.2	33,300
E. costaricensis Micheli	Niehaus	9200	3.6849	8.5	18.1	10.0	0.2	13,500
E. occidentalis Stand.	(undesignated)[4]	9398	1.2718	13.2	18.7	8.5	0.08	83,500
E. lanata Rose	(undesignated)	9399	1 2906	6.8	16.4	8.6	0.25	26,700
E. mexicana Kruk.	(undesignated)	9408	1.3458	11.7	29.3	9.0	0.08	83,500
E. Buchii Urb.	(undesignated)[4]	9414	0.8970	11.2	19.1	6.0	0.06	111,000
E. suberifera Welw. (?)	Louis	9416	3.0003	9.4	16.1	20.0	0.2	33,300
E. macrophylla DC.	Armstrong	9419/32	3.0000	9.4	16.1	20.0	0.06	111,000
E. Eggersii Kruk. & Mold.	(undesignated)[4]	9417	1.0370	17.2	17.3	6.9	0.04	166,000
E. chiapasana Kruk.	(undesignated)[4]	9429	0.9278	9.3	15.7	6.2	0.3	22,200
E. Standleyana Kruk.	(undesignated)[4]	9431	2.3395	17.8	13.0	15.6	2.5	2,700
E. Goldmanii Stand.	(undesignated)[4]	9428	1.5170	11.1	14.0	10.1	0.4	16,600
E. americana Mill.	(undesignated)[4]	9430	2.0449	14.0	17.6	13.6	0.6	11,100
E. coralloides DC.	(undesignated)[4]	9433	2.3613	19.6	14.8	15.8	0.05	134,000
E. americana Mill.	(undesignated)[4]	9432	2.4755	15.5	15.0	16.5	1.5	4,400
E. costaricensis Micheli	(undesignated)[4]	9435	1.4699	13.0	16.3	9.8	0.6	11,100
E. lanceolata Stand.	(undesignated)[4]	9436	1.9878	16.6	16.0	13.2	0.2	33,300
E. mexicana Kruk.	Giesemann	9240	3.0000	16.1	19.0	20.0	0.3	22,200
E. caffra Thunb.	Smithers	9279	3.0000	11.9	16.0	20.0	0.6	11,100

[1] These seeds were obtained from a cultivated plant.

[2] These seeds were obtained from pods left over on a tree at the end of the fruiting season.

[3] This sample showed a very low paralysis potency value, whereas other samples of the species as well as those of the related *E. suberosa* and *E. glabrescens*, showed high values uniformly. This low potency might be simply the result of an abnormal plant.

[4] These seeds were old.

was used for an assay. This meant that micro quantities of active alkaloids were being determined. No attempt was made to discard the seed coat, all particles of the ground seeds being uniformly used. The manipulative details of the assay procedure were the same as those which were developed and described previously (1). Although this research is not directly concerned with the fatty oil content of the seeds, interesting data on the amounts of this fatty fraction in the seeds of

various species were obtained since its initial removal facilitated the analytical procedure. There was one significant change in the assay procedure; the amount of water used to dissolve the ethanol extractives was always in the proportion of twenty ml. of water to three Gm. of powdered seeds. The ethanol extractives contained practically all of the active alkaloids together with extraneous material which was inert in the pharmacological test.

The extracts were tested by intralymphatic injection into a series of frogs, two animals being used for each dose level and the dose levels differing from each other by 10% to 25%. The validity of the results obtained by this procedure has been established and checked by an experiment with a large number of animals. Using twenty frogs per dose level it was found that the reaction of the frogs was consistently uniform. The minimum effective dose, as determined previously on two frogs per dose level, produced paralysis in seventeen out of twenty frogs; a dose 15% below the threshold dose paralyzed only three out of twenty frogs. The minimum dose which caused a complete curare-like paralysis was checked by electrical stimulation of both the nerve and muscle. From this minimum or threshold dose, the potency of the seed or the "paralysis potency value" was calculated. This value is defined as the number of Gm. of frog paralyzed by the extract of one Gm. of seed. The average error in the final paralysis potency values should be within 25%, a degree of accuracy which seemed sufficient for this type of investigation.

The paralysis potency values of different species were found to vary widely, the figures in the last column of Table I ranging from 125 to 166,000. These values correspond well with those previously reported (1), or 165 to 82,000 for twenty-three species of *Erythrina*.

Paralysis occurred within thirty to forty-five minutes after the injection, even by the smallest effective dose. The frogs injected with the threshold dose were paralyzed for approximately one hour and had completely recovered after three hours. Frogs injected with ten times the amount of the threshold dose recovered the next day. No deaths occurred even after the injection of a multiple of the threshold dose. Increase in dosage only prolonged the effect in frogs. The action of all extracts was rather transient. The short duration of the action of the *Erythrina* extracts contrasts markedly with the lasting paralysis caused by curare or by the extract of plants which are known as the essential ingredients of curare; *i. e.*, species of *Strychnos*.

During the testing of seeds of species of *Erythrina*, there was occasion to test seeds of species of related genera or of genera the seeds of which superficially resemble those of *Erythrina*. Seeds of these plants were tested by the same procedure, and the data are recorded in Table II. In no

TABLE II.—DATA ON OTHER PLANTS OF INTEREST.

Name of Plant.	Specimen Numbers.[1]	Amount Gm. Seeds.	Fatty Fraction %.	Ethanol Extractives %.	Water Added Ml.	Threshold Dose Ml./Kg.	Paralysis Potency Value Gm. Frog/1 Gm. Seed.
Rhynchosia pyramidalis (Lam.) Urb.	9139	4.1286	0.7	4.7	1.8	10.0	43
Canavalia maritima (Aubl.) Thou.	9265	3.0002	1.0	8.6	20.0	(40.0)[2]	Negative
Clitoria arborescens Ait.	9299	1.3512	13.3	17.8	9.0	8.0	830
Clitoria mariana L.	9300	1.1231	18.1	18.2	7.5	(40.0)[2]	Negative
Mucuna urens (L.) DC.	9297	4.4732	4.3	4.1	30.0	(20.0)[2]	Negative
Mucuna deeringiana (Bart.) Small	9296	2.8100	4.5	7.8	18.5	(40.0)[2]	Negative
Mucuna pruriens (L.) Pers.	9298	3.0000	2.8	6.1	20.0	(40.0)[2]	Negative

[1] All the seeds tested were old.

[2] There was no curare-like paralysis of the frogs at this high dose. Tests with Mayer's, Valser's and Scheibler's reagents indicated the absence of alkaloids.

case was any marked degree of curare-like activity discovered. Seeds of five of the seven species listed in Table II were free of alkaloids and showed no action at all. Only the extracts of the seeds of *Rhynchosia pyramidalis* and *Clitoria arborescens* possess some curare-like action which, com-

pared to the activity of the *Erythrina* seeds in Table I, was very weak. If the potency of the alkaloids in these two species responsible for the curare-like action is of the same order of magnitude as that of the *Erythrina* alkaloids, then *Rhynchosia pyramidalis* and *Clitoria arborescens* contained only traces of alkaloids. However, an examination of certain other species of these genera might reveal the presence of greater activity. Santesson (4) recently examined *Rhynchosia phaseoloides* and found positive alkaloidal and gucosidal reactions. However, he did not observe a curare-like action of the extract in the frog.

It is obvious that the paralysis potency values of the *Erythrina* seeds could be used to other advantages if the relationships between the species were better known. For example, knowledge of the identities, quantities and activities of the alkaloids of one species of *Erythrina* will enable one to suggest quite accurately the nature of the alkaloid content of related species on the basis of comparative paralysis potency values. After the recent taxonomic studies (2,3) on the genus *Erythrina*, it has been possible to arrange the species in the order of their probable relationship, to attach the corresponding paralysis potency values, and thus have in a compact form a series of values for interpretation and guidance. This arrangement has been shown in Table III, and only the significant data have been recorded. Where necessary, data were taken from the results already published (1). In preparing Table III it has been found desirable to list all species of *Erythrina* known to date even though an assay of all species has not yet been made. In this way, estimates can be made from existing data for those species which have not yet been available for actual testing.

TABLE III.—PARALYSIS POTENCY VALUES ON SPECIES OF THE GENUS ERYTHRINA.

	Species.	Names and Numbers.		Paralysis Potency Value.
Subgenus *Chirocalyx*.				
	Section *Merocraspedon* (African Species).			
1	*E. abyssinica* Lam.	Ross	9179	46,000[10]
	E. abyssinica Lam.	Louis	9259/5928	11,100
2	*E. comosa* Hua			
3	*E. Droogmansiana* De. Wild. & Th. Dur.			
4	*E. orophila* Ghesg.	Louis	9357	8,300
5	*E. Schliebenii* Harms			
6	*E. Addisoniæ* Hutch. & Dalz.			
7	*E. suberifera* Welw. (?)	Louis	9416	33,300
8	*E. mossambicensis* Sim.			
9	*E. Tholloniana* Hua			
10	*E. eriotricha* Harms			
11	*E. Sacleuxii* Hua			
12	*E. Dybowskii* Hua			
13	*E. Sigmoidea* Hua (?)	(Bur. Econ. Fr. Guin.)	9275	44,400
14	*E. decora* Harms			
15	*E. sudanica* E. G. Baker			
	Section *Dichilocraspedon* (African Species)			
16	*E. Mildbrædii* Harms			
17	*E. Klainei* Pierre			
18	*E. Buesgenii* Harms			
19	*E. altissima* A. Chev.	(Serv. For. Cote D'Ivoire)	9291	6,600
	Section *Dilobochilus* (African Species)			
20	*E. excelsa* Baker	Thomas	9342	33,300
21	*E. Burtii* E. G. Baker			

Section (?) (African Species)

22	*E. rotundato — obovata* E. G. Baker			

Group *Variegatæ* (Asiatic-Polynesian Species, Numbers 23–31; American Species, Numbers 32–33; Australian Species, Numbers 34–35)

23	*E. variegata* L.	(Buitenzorg)	9148	410[10]
23*a*	*E. variegata* L. var. *orientalis* (L.) Merr.	Haigh	9172	500[10]
	"	Otero	9131	240[10]
	"	(undesignated)	9129	450[10]
	"	Canicoza	9152	240[10]
24	*E. Parcellii* Bull.	Dorasami	9280	500
25	*E. mysorensis* Gamble	Sutton	9270	125
26	*E. rostrata* Ridl.			
27	*E. Merrilliana* Kruk.			
28	*E. euodiphylla* Hassk.			
29	*E. boninensis* Tuyama			
30	*E. tahitensis* Nadeaud			
31	*E. sandwicensis* Degener	L. W. Bryan	9136	40,000[10]
32	*E. velutina* Willd.	Walmsley	9211	33,300
	E. velutina Willd.	Gomez Parente	9169	33,300
	E. velutina Willd.	Krug	9196	4,400[7]
	E. velutina Willd.	Vasconcellos Sobrinho	9263	16,650
32*a*	*E. velutina* forma *aurantiaca* (Ridl.) Kruk.	Dias da Rocha	9272	11,100
33	*E. Grisebachii* Urb.	Walsingham	9316	8,300
34	*E. vespertilio* Benth.	Trist	9180	2,500[10]
35	*E. insularis* F. M. Bailey			

Subgenus *Euerythrina*

Group *Phlebocarpæ* (Australian Species)

36	*E. phlebocarpa* F. M. Bailey			

Group *Arborescentes* (Asiatic Species)

37	*E. arborescens* Roxb.	Sayeeduddin	9225	66,600

Group *Subumbrantes* (Asiatic Species)

38	*E. subumbrans* (Hassk.) Merr.	(Buitenzorg)	9151	35,400[10]

Group *Suberosæ* (Asiatic Species)

39	*E. suberosa* Roxb.	Dorasami	9281	83,300
40	*E. glabrescens* R. N. Parker	Bor	9334	33,300
41	*E. microcarpa* Koorders & Valeton			
42	*E. stipitata* Merr.			
43	*E. stricta* Roxb.	Biswas	9290	330[3]
	E. stricta Roxb.	Biswas	9290	660[3]
	E. stricta Roxb.	Ghose	9289	22,200
	E. stricta Roxb.	Broadfoot	9341	33,300
	E. stricta Roxb.	Bor	9335	33,300
44	*E. resupinata* Roxb.			

Group *Fuscæ* (Asiatic-Polynesian Species No. 45; American Species No. 46)

45	*E. fusca* Lour.	Canicoza	9153	9,200[10]
	E. fusca Lour.	(Buitenzorg)	9146	9,500
	E. fusca Lour.	(Buitenzorg)	9149	11,700
46	*E. glauca* Willd.	Campos Porto	9199	39,400[10]

	E. glauca Willd.	Dugand	9203	33,300
	E. glauca Willd.	Roig	9214	33,300
	E. glauca Willd.	Haigh	9170	33,300
	E. glauca Willd.	Janz	9343	16,650[1]
	Group *Cristæ-galli* (American Species)			
47	*E. crista-galli* L.	Diddell	9132	16,000[2,10]
	E. crista-galli L.	Meyer	9212	83,300
48	*E. falcata* Benth.	Thays	9188	41,000[10]
	E. falcata Benth.	Santini	9274	11,100
	Group *Vernæ* (American Species)			
49	*E. Pæppigiana* (Walp.), O. F. Cook	(Buitenzorg)	9150	51,400[10]
50	*E. Ulei* Harms			
51	*E. Dominguezii* Hassler	Schulz	9197/1569	49,000[10]
52	*E. verna* Vell.			
53	*E. flammea* Herzog			
	Group *Speciosæ* (American Species)			
54	*E. speciosa* Andr.	(undesignated)	9232	6,600
	Group *Edules* (American Species)			
55	*E. polychaeta* Harms			
56	*E. Schimpffii* Diels			
57	*E. edulis* Triana	Jaramillo	9182	165[4,10]
	E. edulis Triana	Robledo	9231	1,000
	Group *Leptorhizæ* (American Species)			
58	*E. breviflora* DC.			
58a	*E. breviflora* forma *petræa* (Brand.) Kruk.	(undesignated)	9397	33,300
58b	*E. breviflora* forma *oaxacana* Kruk.			
59	*E. leptorhiza* DC.			
60	*E. horrida* DC.			
61	*E. montana* Rose & Standley			
	Group *Corallodendra* (American Species)			
62	*E. Corallodendrum* L.			
62a	*E. Corallodendrum* var. *connata* Kruk.			
62b	*E. Corallodendrum* var. *bicolor* Kruk.			
63	*E. amazonica* Kruk.			
64	*E. similis* Kruk.			
65	*E. peruviana* Kruk.			
66	*E. Eggersii* Kruk. & Mold.	(undesignated)	9417	166,000[5]
67	*E. pallida* Britton & Rose	Wortley	9257	22,200
68	*E. mitis* Jacq.			
69	*E. leptopoda* Urb. & Ekm.			
70	*E. Buchii* Urb.	(undesignated)	9414	111,100[8]
	Group *Cubenses* (American Species)			
71	*E. cubensis* C. Wright	Acuna	9234	33,300
	Group *Herbaceæ* (American Species)			
	Subgroup *Lanatæ*			
72	*E. herbacea* L.	Brazol	9144	82,000[10]
	E. herbacea L.	(undesignated)	9125	13,700[8,10]

73	*E. coralloides* DC.	(undesignated)	9433	134,000[5]
74	*E. flabelliformis* Kearney	Marshall	9138	49,000[5,10]
	E. flabelliformis Kearney	Marshall	9138	50,300[9,10]
	E. flabelliformis Kearney	(undesignated)	9126	29,100[5]
75	*E. lanata* Rose	(undesignated)	9399	26,700[5]
76	*E. occidentalis* Stand.	(undesignated)	9398	83,500[5]
	Subgroup *Americanæ*			
77	*E. Berteroana* Urb.	Benitez (Guatemala)	9159	6,900[10]
	E. Berteroana Urb.	Armstrong (Guatemala)	9178	5,300[10]
	E. Berteroana Urb.	Otero (Puerto Rico)	9166	8,000[10]
	E. Berteroana Urb.	(undesignated)	9130	3,360[5,10]
	E. Berteroana Urb.	Montealegre (Costa Rica)	9193	11,400[10]
78	*E. americana* Mill.	Purpus	9145	1,870[10]
	E. americana Mill.	Conzatti	9135/5383	10,000[10]
	E. americana Mill.	Mexia	9394/9022a	6,600
	E. americana Mill.	(undesignated)	9430	11,100[5]
	E. americana Mill.	(undesignated)	9432	4,400[5]
79	*E. Standleyana* Kruk.	(undesignated)	9431	2,700[5]
80	*E. chiapasana* Kruk.	(undesignated)	9429	22,200[5]
81	*E. Goldmanii* Stand.	(undesignated)	9428	16,600[5]
	Subgroup *Rubrinerviæ*			
82	*E. rubrinervia* H. B. K.	Jaramillo	9181	29,300[10]
83	*E. mexicana* Kruk.	Giesemann	9240	22,200
	E. mexicana Kruk.	(undesignated)	9408	83,500[5]
84	*E. lanceolata* Stand.	(undesignated)	9436	33,300[5]
85	*E. hondurensis* Stand.	Chickering	9157/133	3,100[5,10]
86	*E. gibbosa* Cuf. od.			
87	*E. panamensis* Stand.			
88	*E. costaricensis* Micheli	(undesignated)	9435	11,100[5]
	E. costaricensis Micheli	Niehaus	9200	13,500
89	*E. Folkersii* Kruk. & Mold.	Kinloch	9167	4,200[10]
	Subgroup *Macrophyllæ*			
90	*E. macrophylla* DC.	Armstrong	9419/32	111,000
91	*E. cochleata* Stand.			
92	*E. chiriquensis* Kruk.			
93	*E. Smithiana* Kruk			
94	*E. colombiana* Kruk.			
	Group ? (African Species)			
95	*E. acanthocarpa* E. Mey.	Everitt	9198	66,600[10]
96	*E. Humeana* Spreng			
97	*E. Zeyheri* Harv.			
98	*E. caffra* Thunb.	Robertshaw	9175	8,300[5,10]
	E. caffra Thunb.	Smithers	9279	11,100
99	*E. lysistemon* Hutch			
100	*E. senegalensis* DC.	(Bur. Affair Econ. Fr. Guin.)	9202	20,000[10]
101	*E. Baumii* Harms			
102	*E. melanacantha* Taub.			

103 *E. Brucei* Schweinf.
104 *E. Livingstoniana* Baker
105 *E. Bagshawei* Bak. f.

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1 These seeds were from a cultivated plant.
2 These seeds were from a plant cultivated in Florida, U. S. A.
3 These seeds may be those of an abnormal plant.
4 These seeds had been poorly dried and molded in storage.
5 These seeds were old.
6 These seeds were of a horticultural variety; flowers orange.
7 These seeds were from pods left over on a tree at the end of the fruiting season.
8 This value represents the red seeds.
9 This value represents the buff-colored seeds.
10 Reference 1.

DISCUSSION.

These studies covering fifty-one out of the one hundred and five species of *Erythrina* known at present have shown that so far no species of this genus is devoid of alkaloids producing a curare-like paralysis in frogs, and therefore it seems justified to assume that the presence of alkaloids of this type constitutes a characteristic feature of the genus. As observed in Table III, this assumption has experimental justification because of the fact that the fifty-one tested species represent nearly all of the sections and groups of the genus and were collected from nearly all tropical and subtropical countries.

However, it is not surprising that there should be wide variations in the potency of the seeds of different species. Thus *E. variegata* and closely related species of the group *Variegatæ* showed a very low paralysis potency value. The large soft seeds of *E. edulis* (group, *Edules*) were quite low in activity, a result which is not so surprising since these seeds are consumed extensively, either cooked or fried, by people in Colombia. Undoubtedly, these low values represent only traces of the active alkaloids. The presence of only traces of active alkaloids in *E. variegata* probably accounts for the fact that they have not been discovered before in this well-known and widespread species. Higher values than these are found within the genus. The seeds of *E. Eggersii* were outstanding, their paralysis potency value being considerably higher than that of seeds of any other species tested so far.

It is interesting to observe that there exists a distinct uniformity in the potency of the seeds of the closely related species as their relationship is interpreted by taxonomists on the basis of botanical characters. This uniformity extends to certain taxonomic divisions of the genus, such as the groups *Suberosæ*, *Fuscæ* and *Vernæ*, as well as the subgroups *Lanatæ*, *Americanæ* and *Rubrinerviæ*. The complex and variable species, as a rule, showed considerable variations in their paralysis potency values, whereas those species which are uniform in their botanical characters and have a limited range showed more uniform paralysis potency values. It was found repeatedly that plants, represented by specimens which deviated somewhat from the more usual form of a given species, deviated also in their seed paralysis potency values. Certain species, such as *E. americana* and *E. coralloides*, which are difficult to distinguish without good herbarium material, or

E. Berteroana and *E. cubensis*, the seeds of which certainly cannot be distinguished in the absence of leaves, were found to be easily distinguished on the basis of their seed paralysis potency values. Furthermore, we have made numerous tests on seeds of certain species (such as *E. glauca*) from plants grown in widely separated regions and obviously on different soils and under different climatological conditions and found but slight variations. Thus, the soil and local climatological conditions are of minor importance for a given species. All these data lead to the conclusion that the curare-like potencies are primarily dependent upon the inherent characters of the plants.

It is, of course desirable to know next what these paralysis potency values represent. In such a pharmacological test as used for these assay experiments, the threshold dose observed and utilized for calculations is probably the effect of the most potent alkaloids present or the alkaloids present in predominating amounts. In other words, the threshold dose of these crude extracts may not necessarily represent the major alkaloid or alkaloids, but may express only the potency of a mixture of quite different alkaloids which may be present. Fully to explain and interpret these paralysis potency values, it would be necessary to know the amounts of the major alkaloids present and their individual pharmacological activities. This knowledge on the *Erythrina* alkaloids is being accumulated (5, 6, 7, 8) in connection with our studies on alkaloids of curare-like action, and it is expected that these chemical and pharmacological data will be used also at a future date for a full explanation of the paralysis potency values.

ACKNOWLEDGMENTS.

We are especially indebted to Mr. B. A. Krukoff of the New York Botanical Garden for determination of plants, for his suggestions and advice on botanical matters, and for the task of obtaining plant materials used in these researches.

We wish to express our sincere appreciation to the many people whose efforts as well as their courtesy in sending samples of seeds have made this study possible. The technical assistance of Messrs. W. B. Wright, M. Kasha and S. Kuna is gratefully acknowledged.

SUMMARY.

Data have been presented which have shown the presence of alkaloids with curare-like action in twenty-eight additional species of *Erythrina*. Altogether, fifty-one species have been tested out of the one hundred and five species known to date. The pharmacological activity is expressed by "paralysis potency values." No species has been found so far which is devoid of alkaloids of paralyzing activity, although there is a wide variation in the potencies of the seeds of the different species. However, there is a considerable uniformity of the paralysis potency values of seeds of the closely related species. This uniformity often extends even to certain taxonomical divisions of the genus.

The paralysis potency values for seeds of *Erythrina* parallel closely the inherent botanical characters of the plants, and it is possible in some cases when proper herbarium material is absent to distinguish between certain seeds on the basis of this assay.

Species of the genera *Rhynchosia*, *Canavalia*, *Clitoria* and *Mucuna* were tested similarly for paralysis potency. All were found to be devoid of alkaloids with the

exception of the seeds of *Rhynchosia pyramidalis* and *Clitoria arborescens*. These were found to have some curare-like action which, compared to that of *Erythrina* seeds, was extremely weak and probably represented only traces of active alkaloids.

The curare-like action of the extracts of all species of *Erythrina* tested in frogs was of short duration when compared to the duration of paralysis of extracts of curare or curare plants.

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THE DETERMINATION OF IRON IN IRON SALTS OF ORGANIC ACIDS CONTAINING PHOSPHORUS.*

BY C. F. BICKFORD[1] A. E. JURIST[1] AND W. G. CHRISTIANSEN.[1]

The gravimetric estimation of iron is complicated by the presence of phosphorus. There are several methods mentioned in the literature which may be used to assay iron salts of organic acids containing phosphorus. One method is based upon the titration of the iron, previously reduced to the ferrous state, with an oxidizing agent as described by Kolthoff and Furman (1). Another, in which the iron is extracted as ferric chloride from a strong hydrochloric acid solution with ether, is described by Scott (2). Kolthoff and Furman (3) also mention a third one based on the reduction of ferric iron to ferrous iron by iodide and subsequent titration of the liberated iodine with thiosulfate. Also, modifications of these basic methods appear in the literature on this subject.

In the case of organic compounds interference due to organic matter must be considered. The methods mentioned above are adaptable only after destruction of the organic matter. We have used one which, in addition to being applicable after destroying organic matter, can apparently in some instances at least be employed without doing that. This method comprises the precipitation of the iron as sulfide (4, 5) in ammoniacal solution, separating it in this way from the phosphorus and other interfering constituents; the sulfide is then converted to the hydroxide, for weighing as ferric oxide. The method has been applied to samples of iron adenylate with satisfactory results.

Iron adenylate has the empirical formula $C_{10}H_{12}N_5O_7PFe$, containing 13.93% of iron. Values obtained after oxidation of the samples range from 13.36% to 14.42%. When the destruction of organic matter was omitted and the method was applied directly, the findings ranged from 13.72% to 14.05%.

* Presented before the Scientific Section, A. PH. A., Atlanta meeting, 1939.

[1] Chemical and Pharmaceutical Laboratories, E. R. Squibb and Sons, Brooklyn, N. Y.

EXPERIMENTAL.

The following results were obtained when iron adenylate was assayed by the two methods described herein.

Sample.	Iron Content. After Oxidation.	Direct.
A	13.45%	...
B	13.36%	...
C	14.42%	...
D	13.42%	...
E	14.37%	14.05%
F	13.77%	13.72%
G	...	13.88%

The methods used to obtain the above results are described as follows:

Iron Assay with the Destruction of Organic Matter.—Place a 0.5-Gm. sample in a 250-cc. Erlenmeyer flask and add 5 cc. of concentrated sulfuric acid. Warm gently on a hot plate for several minutes. Cool thoroughly. Add 5 cc. of 30% hydrogen peroxide and warm gently on a hot plate until white fumes appear. Again cool thoroughly. Repeat the treatment with 5 cc. of 30% hydrogen peroxide once more and then repeat using 2-cc. portions of the hydrogen peroxide until organic matter has been destroyed, taking care to cool thoroughly between each treatment with hydrogen peroxide. After thorough cooling, add 25 cc. of water and 10 cc. of concentrated hydrochloric acid. Warm gently until all the material has dissolved and a clear solution exists. Dilute to 100 cc. with water and heat to incipient boiling. Cool. Pass into the solution a slow current of hydrogen sulfide gas for several minutes, and then add slowly diluted (1 + 1) ammonium hydroxide until an excess has been added. Continue the slow current of hydrogen sulfide for 15 minutes. Set aside on a steam-bath for 30 minutes. Collect the ferrous sulfide on a filter paper and drain completely. Then, wash the precipitate twice with ammonium sulfide water by filling the filter completely and allowing it to empty completely before adding the second portion. The original flask in which the iron sulfide was precipitated should be rinsed with ammonium sulfide water, passing the rinsings through the filter. Dissolve the ferrous sulfide on the filter by pouring several 25-cc. portions of hot diluted (1 + 20) nitric acid through the filter, collecting the filtrate in a 600-cc. beaker. Finally, transfer the filter paper to the original flask, and warm with a 50-cc. portion of the diluted nitric acid. Decant the liquid through a fresh filter paper into the main filtrate in the 600-cc. beaker. Repeat with an additional 50-cc. portion of hot diluted nitric acid. Heat the filtrate gently until the solution is clear. Cool, and stir in a small amount of filter paper pulp. Add slowly, while stirring, diluted (1 + 1) ammonium hydroxide until an excess has been added. Collect the precipitate on a rapid filter (Whatman #41) and wash twice with hot water. In order to transfer all the iron from the beaker to the filter, add some filter paper pulp to the beaker and some diluted (1 + 1) hydrochloric acid. Rotate the beaker until all the iron hydroxide on the sides of the beaker has dissolved; rinse the sides of the beaker with hot water, neutralize with an excess of diluted (1 + 1) ammonium hydroxide, using methyl red indicator solution and transfer the iron hydroxide to the main precipitate. Wash copiously with warm water. Transfer the precipitate and filter to a platinum dish, dry, and ignite slowly and carefully. Cool and weigh. Calculate the iron from the weight of ferric oxide thus obtained.

Iron Assay without the Destruction of Organic Matter.—Weigh 0.5-Gm. of the sample into a 250-cc. Erlenmeyer flask and add 20 cc. of diluted (1 + 1) hydrochloric acid. Warm gently until complete solution results. Dilute to 100 cc. with water, and proceed with the precipitation of iron sulfide, etc., as in the iron assay following the destruction of the organic matter.

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A CHEMICAL INVESTIGATION OF SOME FLORIDA VOLATILE OILS.*,1

BY P. A. FOOTE[2] AND A. W. MATTHEWS.[3]

Early in the Fall of 1936 B. W. Calvert, a farmer near Orlando, sent to the School of Pharmacy of the University of Florida samples of several volatile oils, four of which are herewith reported upon. Specimens of the plants were also received and were identified by Erdman West, botanist at the Experiment Station. The oils were submitted to Fritzsche Brothers, Inc., of New York, who examined them for commercial possibilities. Their report was negative. However, it seemed advisable as a matter of scientific interest, to report on the properties of these oils. The small quantities at hand prevented a thorough investigation; nevertheless the facts as observed will no doubt be of interest to future workers. The oils were produced by steam distillation. All samples were kept in well-stoppered containers, protected from light for two years. Standard methods of examination were usually used. At times the use of dry ice and of semi-micro methods were of great advantage in making and separating derivatives

OIL OF PYCNOTHYMUS RIGIDUS (BART.) FAM. LAMIACEÆ.

This small shrub is common in southern Florida (1). The literature failed to reveal any previous work on this oil. The 20-cc. sample was greenish yellow in color and possessed a strong mint-like odor and taste. The following constants were found:

$d_{15^\circ}^{20^\circ}$ 0.9323; α_D −4.14°; $n_D^{20^\circ}$ 1.4681; A. V. 1.75; E. V. 135.51; E. V. after acetylation 272.17; boiling range 160–220° C., with the greater portion distilling over at 214–215° C. Tests for nitrogen, sulfur, phenols and aldehydes were negative.

Alcohols.—A 3.5-cc. portion of the oil (from a 5-cc. sample), which boiled between 207–220° C., $n_D^{20^\circ}$ 1.4668, failed to yield a crystalline phenylurethane or a hydrogen phthalate ester that could be crystallized. Its odor and properties were indicative of thujyl alcohol but lack of material hindered definite proof. Assuming a composition of $C_{10}H_{18}O$, the ester values, before and after acetylation, calculate out to the equivalent of 47.02% free alcohol and 47.23% acetate.

Ketones.—A 3.5-cc. sample of the original oil yielded a sodium bisulfite addition product, which required forty-eight hours for separation. After filtration and washing it was regenerated by treatment with sodium carbonate and steam distillation. It possessed an odor similar to pulegone and gave an oxime, m. p. 115–117° C., very close to that reported for this ketone. Further purification might have raised the melting point but the quantity was too small.

OIL OF SOLIDAGO RIGIDA LINNÉ, FAM. COMPOSITÆ.

According to Small (1) this herb is found in swampy woodlands and thickets and is fairly widely distributed in North America. Several oils of the genus Solidago have been reported in the literature, including those of *S. rugosa* (3), (4); *S. canadensis* (5), (6); *S. nemoralis* (7), (8); and *S. odora* (4), which was official in the United States Pharmacopœia from 1820 to 1870 The oil of *S. rigida* seems to have escaped previous attention. Among the constituuents which have been found in these oils are α-pinene, phellandrene, dipentene, limonene, borneol, bornyl acetate and methylchavicol.

The 26-cc. sample was almost water-white in appearance and both odor and taste were somewhat remindful of oil of pine. The following constants were found: $d_{15^\circ}^{20^\circ}$ 0.8500; α_D +38.15°; $n_D^{20^\circ}$ 1.4798; A. V. 0.39; E. V. 8.68; E. V. after acetylation 160.15. The main bulk of the oil distilled over at 165° C., less than 0.5 cc. of higher boiling material remaining from a 3-cc. sample. Tests for nitrogen, sulfur, phenols, aldehydes and ketones were negative.

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[1] Abstract of a portion of a thesis to be submitted to the Graduate Council of the University of Florida in partial fulfilment of the requirement for the degree of Doctor of Philosophy.

[2] Professor of Pharmacy, University of Florida.

[3] Associate Professor of Pharmacy, University of Alberta.

Alcohols.—The above-mentioned higher boiling-point residue gave a phenylurethane, m. p. 136–140° C., which was not available in sufficient quantity for recrystallization. This was believed to be bornyl phenylurethane, m. p. 138–139° C. (2). The odor of the oil was also suggestive of borneol. However, the low density and boiling range do not support a high borneol content and, since an ester value after acetylation of 160.15 was observed, the presence in the oil of some other alcohol in addition to borneol is suggested.

Terpene Fraction.—The 2.5-cc. fraction boiling at, or below, 165° C., $n_D^{20°}$ 1.4820, gave a nitrosochloride somewhat resembling α-pinene nitrosochloride in appearance but the presence of other terpenes or substances hindered crystallization of a characteristic nitrol piperidine. Thus positive identification was not established. The refractive index of this fraction was considerably higher than would be given by α-pinene alone.

OIL OF ERIGERON CANADENSIS LINNÉ, COMPOSITÆ.

This plant, sometimes known as fleabane, horseweed or butterweed, has a wide distribution and is often found growing in mint fields. Upon distillation the fresh herb yields 0.33% to 0.66% of oil (2). Procter (9) attributes the introduction of erigeron oil into medical practice to the "eclectic" physicians. Various investigators in this country and in Germany and Russia have reported on the constants of this oil and their results show wide variation. Wallach (10) identified limonene as one of the constituents and Meissner (11) confirmed the presence of this substance in samples of oil from two different sources. Hunkel (12) established the presence of terpineol in a fraction boiling 205–206° C.

The 28-cc. sample of this oil was a light amber color and, at the time of examination, showed distinct evidence of resinification. The odor appeared to combine the characteristics of dill and lemon and the taste suggested caraway. The following constants were found: $d_{15°}^{20°}$ 0.8642; α_D +71.70°; $n_D^{20°}$ 1.4809; A. V. 1.94; E. V. 17.12; E. V. after acetylation 75.05 (method of V. Boulez (13)). All these with the exception of the ester value are within the reported limits for erigeron oil, the reported ester values ranging from 39.09 to 70.9. With a 5-cc. sample, less than 1 cc. distilled over at about 145° C., while about 3 cc. passed over in the region of 170° C., leaving a dark-brown residue of higher boiling material. Tests for nitrogen, sulfur and phenols were negative.

Aldehydes.—A positive aldehyde reaction was obtained both with Tollen's and Schiff's reagents and when tested by the method of Rodionow and Korolew (14). At least one investigator (11) has called attention to the likely presence of an aldehyde in oil of erigeron but no record could be found of the successful separation and identification of same. It is believed that the amount of aldehyde present in this case was very small and no addition product with bisulfite was separated. With semicarbazide a trace of a crystalline residue was obtained, which after one recrystallization was observed to melt at 149–152.5° C. (Fisher-Johns melting point apparatus). An odor suggestive of citral was noted in the saponification residues of this oil and it has been stated (2) that mixtures of the semicarbazones of citral *a* and citral *b* may show melting points between 139° and 170° C.

Alcohols.—Since terpineol had been reported (12) as a constituent of oil of erigeron, the ester value after acetylation was determined both by the classical method and by the method of V. Boulez (13), which is claimed to be superior to the former when tertiary alcohols are present. The Boulez method gave a significantly higher result, 75.05 as compared to 45.15 by the usual method. This former value is found to be equivalent to 16.82% terpineol and the observed ester value of 17.12% to 5.94% terpineol acetate. The high boiling-point residue (approximately 1 cc.) was not sufficiently pure to yield a crystalline terpineol nitrosochloride by the method of Wallach (10).

Terpene Fractions.—A crystalline nitrol piperidene, m. p. 92–93° C. was obtained from the 3-cc. portion which distilled over at 170–175° C. The melting point of α-limonene nitrolpiperidine is given as 94° C. (2). The small fraction of lower boiling range may have been a mixture of limonene with some lower boiling terpene, since no characteristic piperidine base could be crystallized.

OIL OF HETEROTHECA SUBAXILLIARIS (LAM.), FAM. CARDUACEÆ.

This small herb inhabits pinelands, sand-dunes and waste places, various provinces Fla. to Tex., Ariz., Kans. and Del. (1). No reference could be found to previous investigation of the volatile oil from this source.

The 4-cc. sample possessed a yellow color and a strong pine-like odor. The following constants were found: $d_{15^\circ}^{20^\circ}$ 0.8877; $n_D^{20^\circ}$ 1.4931; A. V. 0.48; E. V. 26.13; E. V. after acetylation 160.91; boiling point (micro-method) about 200° C. Tests for nitrogen and sulfur were negative.

The odor and the approximate boiling point (200° C.) were suggestive of borneol. Calculating ester values obtained in terms of $C_{10}H_{18}O$, 9.15% combined and 42.28% free alcohol were found.

SUMMARY.

The physical and chemical constants of the following volatile oils have been reported on: Oil of *Pycnothymus rigidus*, Oil of *Solidago rigida*, Oil of *Erigeron canadensis*, Oil of *Heterotheca subaxillaris*. As far as quantities permitted, the principal constituents have been identified.

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CHEMOTHERAPEUTIC STUDIES IN THE AZOBENZENE SULFONCHLORAMIDE SERIES. II. META AND PARA DERIVATIVES.*,[1]

BY SEYMOUR STERN AND ABRAHAM TAUB.[2]

In 1916 Dakin and co-workers (1), (2) investigated the mode of action of the alkali hypochlorites and concluded that their antiseptic action was due to their interaction with proteins and other amino compounds, resulting in the formation of substances containing chlorine linked to nitrogen. In their attempts to find related substances having greater practical utility, they investigated many compounds containing the chloramine group, =N—Cl. Their studies indicated that all substances containing this group showed some germicidal activity, that slight changes in this activity resulted from nuclear substitution of aromatic chloramines by halogen,

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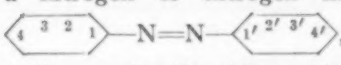
[1] Abstracted in part from the dissertation submitted by Dr. Stern to the Graduate Faculty of Columbia University, College of Pharmacy, in partial fulfilment of the requirements for the degree of Doctor of Pharmacy.

[2] Associate Professor of Pharmaceutical Chemistry, Columbia University.

alkyl or nitro groups, and that dicyclic chloramines act similarly to the monocyclic derivatives.

Included among the substances they investigated were some of the N-halogen sulfonamide compounds, first reported by Kastle and co-workers (3), (4) in 1895, and extensively studied by Chattaway (5) in 1905. Of these, Dakin, Cohen and Kenyon (6) selected sodium-*p*-toluenesulfonchloramide because of its non-corrosive and non-protein precipitating properties, its stability in the solid form, its ready solubility in water, its effective germicidal action and its low manufacturing cost.

In 1922, Clutterbuck and Cohen (7), in their attempts to synthesize new N-chlorsulfonamides, found that not all sulfonamides reacted with alkali hypochlorites to form N-halogen derivatives; such compound formation was restricted to the aromatic sulfonamides. Furthermore, the presence of nuclear substituents such as halogen, alkyl, methoxy or nitro groups did not affect the formation of N-halogen sulfonamides; but the interspersion of alkyl side chains of more than two carbon atoms between the nucleus and the sulfonamide group did prevent N-halogen substitution.

In the present research a departure has been made from the nuclear type of compound studied by these previous investigators. Interest has been centered upon dicyclic N-chlorsulfonamides in which nuclear connection is obtained through a nitrogen to nitrogen linkage. Inspection of the azobenzene nucleus  , shows that with regard to position isomerism, three sodium aryl sulfonchloramides and twelve disodium aryl di(sulfonchloramides) are possible. The sodium salts were selected because of their solubility in water.

It is believed that the results of bacteriological tests on the compounds of these series may permit an extension of Dakin's theses, (*a*) that the presence in the molecule of more than one N—Cl group does not confer any marked increase in germicidal power, and (*b*) that the germicidal action of many of the chloramines is mole for mole greater than that of sodium hypochlorite. The results should also add to our present knowledge of the effect of position isomerism upon bacteriological activity.

A survey of the literature shows that only the mono para-isomer has been synthesized, although no study has been made of its chemotherapeutic properties. The present paper is confined to the meta and para derivatives in both the azobenzene mono and di(sulfonchloramide) series.

EXPERIMENTAL.

1. Azobenzene-m-Sulfonamide, m-$C_6H_5N{=}NC_6H_4SO_2NH_2$.—Eleven grams of *m*-aminobenzenesulfonamide (prepared by the general methods of Biderman (8), and Hybbeneth (9), and modified by Stern (10) to produce better yields) were dissolved in 46 cc. of glacial acetic acid at 80° C., and a solution of 6.8 Gm. of nitrosobenzene in 40 cc. of glacial acetic acid was added. After continued heating at 80–90° C. for two hours, the dark-brown mixture was allowed to cool and poured upon 1 Kg. of chipped ice. The greenish black precipitate was collected, washed with water, dissolved in 640 cc. of 0.1*N* sodium hydroxide, and refluxed for one hour in the presence of activated charcoal. After filtering, the hot filtrate was acidified with 0.5*N* hydrochloric acid. The precipitate which formed was collected, washed free of chlorides and dried. The yield of 12 Gm. of impure crystals was crystallized from 110 cc. of hot methyl alcohol (80%) and air dried. Yield 8.1 Gm. of black crystals, m. p. 168–169° C., soluble in ethyl alcohol, methanol, acetone, pyridine, hot alkali; insoluble in water, benzene, ether, ethyl acetate or hydrochloric acid.

Kjeldahl: 0.2002 Gm. substance required 23.70 cc. 0.1*N* HCl.
Calculated for $C_{12}H_{11}N_3O_2S$; N, 16.09%. Found: N, 16.16%.

As the aromatic primary amine employed for the condensation with nitrosobenzene contained a sulfonamide group, it might be expected that this group may also have reacted in a condensation to yield a compound of the formula m-C_6H_5—N=N—SO_2—C_6H_4—NH_2. Such a compound should be soluble in hydrochloric acid and insoluble in alkali due to the free amino group. Actually the compound obtained after recrystallization was a homogeneous product entirely soluble in dilute sodium hydroxide and insoluble in dilute acid, this being characteristic of a compound containing a sulfonamide group.

2. Sodium Azobenzene-m-Sulfonchloramide, m-C_6H_5—N=N—C_6H_4—$SO_2NaNCl.2H_2O$.—To a well-stirred mixture of 5.2 Gm. of azobenzene-*m*-sulfonamide and 50 cc. of water, 82.8 cc. of sodium hypochlorite solution, containing 0.02699 Gm. of NaOCl per cc. and 2% free NaOH was added during 45 minutes, the temperature of the solution rising from 21.5° to 23° C. The insoluble black powder gradually dissolved forming a brown solution and light-brown crystals appeared. Upon heating to 75–80° C. a clear wine-red solution resulted. It was rapidly cooled and stirring was continued for another hour, the crystals forming on the walls of the flask being occasionally washed down with water until the volume measured 250 cc. The crystals were collected, washed with water and air dried, yielding 5.3 Gm. Purification was effected by dissolving the crude compound in 240 cc. of water at 90° C. containing 3.24 Gm. sodium hydroxide, 4.3 Gm. of sodium chloride and 24 cc. of the hypochlorite solution. After filtering, cooling and stirring, amorphous material deposited. After collection, it was found that three washings of the material with water were sufficient to remove chlorides. The p_H of the final wash water remained within the range 7–9 to Hydrion paper. Drying yielded a yellowish orange amorphous powder, which was insoluble in benzene, carbon tetrachloride and anhydrous ether. It dissolved in hot water, hot absolute alcohol, pyridine and acetone.

Calculated for $C_{12}H_9N_3O_3SNaCl.2H_2O$; H_2O, 10.2%. Cl, 10.04%. Na, 6.52%. Found: H_2O, 9.49%; Cl, 9.60%; Na, 6.61%.

3. Sodium Azobenzene-p-Sulfonchloramide.—Following the method of Gray, *et al.* (11), azobenzene-*p*-sulfonyl chloride was prepared and converted to the corresponding sulfonamide. After purification the latter melted at 228–229° C. This was then transformed to the sodium sulfonchloramide by the method of Chrzaszczewska and Dobrowolski (12).

4. Reduction of Potassium m-Nitrobenzene Sulfonate. (*a*) *Potassium Azoxybenzene-3,3′-Disulfonate.*—In the attempt to produce potassium azobenzene-3,3′-disulfonate, the method of reduction of Mahrenholtz and Gilbert (13) was employed. To a boiling solution of 18.1 Gm. of potassium *m*-nitrobenzene sulfonate in 108 cc. of water was added 20.7 Gm. of potassium hydroxide in 190 cc. of water. The solution was transferred to a water-bath and five 2-Gm. portions of zinc dust were added with stirring during 1.75 hr. Heating was continued for 1.5 hr., the volatilized water being replaced. After filtering out the zinc residues a stream of carbon dioxide was passed through the cold filtrate for 1.25 hr. to precipitate the zinc compounds. Upon filtration and evaporation of the filtrate and washings, 44 Gm. of dried residue was obtained. Crystallization from 75 cc. of boiling water yielded 19.5 Gm. of air-dried salt. The lack of solubility of this salt in alcohol indicated that it was not the azo compound. Subsequent experiments by Stern (10) in which the disulfonyl chloride and disulfonamide derivatives were prepared and their melting points checked with those recorded in the literature by Brunneman (14) established the identity of the compound as potassium azoxybenzene-3,3′-disulfonate.

It was found that in order to prepare the corresponding azobenzene derivative and avoid the azoxy stage, it was necessary to carry the reduction far enough to produce a colorless reaction mixture and convert the probable hydrazo compound so produced to the azo stage by spontaneous air oxidation. This new method also has the advantage of being a rapid one.

(*b*) *Potassium Azobenzene-3,3′-Disulfonate.*—Thirty-six grams of potassium *m*-nitrobenzene sulfonate was dissolved in 400 cc. of hot water and 41.4 Gm. of potassium hydroxide in 54 cc. of water was added, the resulting orange solution being heated to 102° C. Under mechanical stirring, nine 4-Gm. portions of zinc dust were added in 15-minute intervals during two hours, the temperature being kept above 90° C. and constant volume being maintained by frequent additions of water. The progress of the reduction was followed by spotting the reaction mixture on filter

paper at fifteen-minute intervals just before each new addition of zinc. The color changed from orange to colorless after the ninth addition of zinc dust. After filtering off the zinc residues, the filtrate began to oxidize in contact with the air. Under mechanical stirring for 3 hr. at 80–90° C. the color reached a maximum and the reaction was considered complete. The solution was boiled, carbon dioxide passed in for two hours, the precipitated zinc compounds filtered out and the filtrate concentrated to 225 cc. The deposited crystals were collected, washed with cold water and dehydrated at 150° C. for 2.5 hr. An addition crop of crystals was obtained by concentrating the mother liquor to 115 cc. Yield 30 Gm. Subsequent experiments in which these crystals were converted to the disulfonyl chloride and the disulfonamide, whose melting points agree well with those recorded in the literature by Mahrenholtz and Gilbert (13), and Limpricht (15), prove that these crystals are potassium azobenzene-3,3′-disulfonate. The method of synthesis precludes the possibility of the formation of positional isomers.

5. Disodium Azobenzene-3,3′-di(Sulfonchloramide), $(ClNNaSO_2—C_6H_4N=)_2.4H_2O$.—To a well-stirred mixture of 6.8 Gm. of azobenzene-3,3′-disulfonamide (13), (15) and 50 cc. of water, 100.5 cc. of sodium hypochlorite solution, containing 0.04443 Gm. of NaOCl per cc. and 5% free NaOH, was added during 45 minutes. After 23 cc. of the solution was added the suspended crystals formed a clear orange-brown solution, but after 40 cc. was added a buff-colored powder began to separate. After stirring for one hour the insoluble material was collected, washed twice with 5-cc. portions of water and dried, yielding 9.1 Gm. This was purified by dissolving in a hot solution containing 4.8 Gm. of sodium hydroxide, 4.8 Gm. of sodium chloride, 310 cc. of water and 50 cc. of sodium hypochlorite solution. After filtering, 150 cc. of saturated salt solution was added, the mixture cooled and the amorphous material which separated was collected and washed twice with water. The p_H range of the washings was 7–9. The air-dried powder is insoluble in absolute alcohol, carbon tetrachloride, benzene, dry ether and acetone. It is soluble in hot water and slightly in hot pyridine.

Calculated for $C_{12}H_8N_4O_4S_2Na_2Cl_2.4H_2O$: H_2O, 13.8%; Cl, 13.5%; Na, 8.8%. Found: H_2O, 13.05%; Cl, 13.23%; Na, 8.55%.

6. Disodium Azobenzene-4,4′-di(Sulfonchloramide), $(ClNNaSO_2—C_6H_4N=)_2.4H_2O$.—Into a flask containing 50 cc. of water and 6.8 Gm. of azobenzene-4,4′-disulfonamide, prepared by the method of Stern and Linnell (16), 82.8 cc. of sodium hypochlorite solution, containing 0.05398 Gm. of NaOCl per cc. and 4% free NaOH, was added while stirring during 45 minutes. A red solution formed upon heating to 65° C. and the insoluble impurties were filtered out. After chilling and stirring for one hour, the filtrate and washings, which measured 150 cc., was saturated with 53.8 Gm. of sodium chloride. The orange-red material which separated was collected, washed with 25 cc. of water and dried, yielding 9.0 Gm. It was purified by dissolving in 102 cc. of water at 80° C. containing 3.6 Gm. sodium hydroxide and 48 cc. of the hypochlorite solution. After filtration, 450 cc. of saturated salt solution was added, the mixture heated to 80° C. and 30 Gm. of sodium chloride added. Chilling to 25° C. caused the separation of the disodium azobenzene-4,4′-di(sulfonchloramide). After collection and washing with five 10-cc. portions of water, the material was air dried. It is an orange powder, insoluble in carbon tetrachloride, benzene, ether and acetone. It is slightly soluble in hot absolute alcohol or pyridine, and very soluble in water.

Results of preliminary bacteriological tests carried out at room temperature against *Staphylococcus aureus* indicate the following order of activity:

Compound.	5-Minute Exposure to Antiseptic.	2-Hour Exposure to Antiseptic.
Chloramine-T	1.0	1
Sodium azobenzene-*m*-sulfonchloramide	0.15	10
Sodium azobenzene-*p*-sulfonchloramide	10.0	100
Disodium azobenzene-3,3′-di(sulfonchloramide)	0.1	10
Disodium azobenzene-4,4′-di(sulfonchloramide)	0.1	10

Results by the agar cup-plate method indicate that the meta and para monosulfonchloramides are slightly less penetrating than chloramine-T, and the two di(sulfonchloramides) are equal to chloramine T.

SUMMARY.

1. Details have been given for the synthesis of potassium azoxybenzene-3,3′-disulfonate, and a rapid method has been presented for the preparation of the corresponding azo derivative, whereby the azoxy stage is avoided.

2. A new intermediate, azobenzene-*m*-sulfonamide, has been synthesized.

3. Three new compounds of the azobenzene sulfonchloramide series have been synthesized.

4. Preliminary bacteriological results show that all the compounds of this series show bactericidal activity and compare favorably with chloramine-T.

The authors are indebted to Professor Fanchon Hart for conducting the bacteriological tests.

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SALTS OF ISOPROPANOLAMINE.

I. TRIISOPROPANOLAMINE.*

BY GEORGE W. FIERO.[1]

Isopropanolamines are now manufactured in quantities and at prices which would make them available for pharmaceutical and cosmetic preparations. Triethanolamine salts have been used as emulsifying agents in such preparations. It appears that isopropanolamines would have similar properties to triethanolamine.

Triisopropanolamine is a white solid, readily soluble in water and possessing a peculiar, disagreeable odor. It has the following physical properties:[2]

Molecular Weight	191.78	Color	<60 on Pt-Co scale
Specific Gravity	1.0196	Vapor Pressure at 20°	Below 0.1 mm.
Melting Point	45° C.	Boiling Point	144° at 5 mm.

* Presented before the Scientific Section, A. PH. A., Atlanta meeting, 1939.

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[2] The writer is indebted to Carbide and Carbon Chemicals Corp. for these data.

Characteristics of Salts.—Salts of fatty acids were prepared by heating molecular quantities of commercial quality fatty acids with triisopropanolamine at a temperature sufficiently high to melt the material. In all cases, as with triethanolamine, heat was evolved during the reaction The salts were compared with salts of triethanolamine prepared in the same manner.

Stearate.—Pale straw colored, solid, definitely lighter in color than the triethanolamine salt, slight not disagreeable odor, soluble in hot water, alcohol and liquid petrolatum.

Oleate.—Amber colored, viscous liquid, definitely lighter in color than the triethanolamine salt and much more fluid, odor slight, soluble in water, alcohol and liquid petrolatum.

Myristate.—White soft solid, softer than the triethanolamine salt which was a brownish, hard solid. Odor slight, soluble in water, alcohol and liquid petrolatum.

Characteristics of Pure Salts.—Salts were prepared using molecular equivalents of triisopropanolamine and pure fatty acids (Eastman). The solution (0.14%) of various salts of triisopropanolamine were tested in the same manner as the salts of triethanolamine previously reported (1). The data in the following table were obtained at 22° C. except surface tension which was obtained at 45° C.

TABLE I.—CHARACTERISTICS OF PURE SALTS.

Fatty Acid Salt (0.14%).	Lather (22°).	Surface Tension (45°).	pH.
Caproate	0	500	6.1
Caprylate	0	438	6.3
Caprate	10%	344	...
Laurate	35%	277	7.0
Myristate	5%	258	8.3
Palmitate	0	302	8.3
Stearate	10%	333	8.3
Oleate	100%	310	7.3

Emulsions.—Emulsions were prepared using 25% of heavy liquid petrolatum containing the molecular proportion of the fatty acid and agitating with water containing the triisopropanolamine on a high-speed mechanical mixer. The extent of emulsification was measured after 48 hours. As in the case of triethanolamine, there was often a tendency to "cream" although the emulsion was not broken. The data are indicated in the following table:

TABLE II.—EMULSIONS.

Fatty Acid Salt.	5%.	2.5%.	1.0%.	0.5%.	0.25%.
Caproate	–	–	–	–	–
Caprylate	2%C 23%O	T C	–	–	–
Caprate	30%C	32%C T O	5%C 20%O	–	–
Laurate	44%C	33%C	31%C T O	9%C 16%O	8%C 18%O
Myristate	+	36%C	34%C T O	20%C 19%O	19%C 11%O
Palmitate	+	90%C	27%C 3%O	11%C 15%O	7%C 19%O
Stearate	+	+	30%C T O	23%C 2%O	15%C 10%O
Oleate	+	+	34%C	26%C 8%O	16%C 15%O

Legend: T = trace; C = cream; O = oil; + = complete emulsion; – = completely broken.

Cosmetics.—Creams were prepared in the manner previously reported (2) for sulfonated hydrogenated castor oil using the following as a basic formula:

White Wax	15 Gm.
Heavy Liquid Petrolatum	50 Gm.
Fatty Acid (Eastman)	*q. s.*
Distilled Water	30 cc.
Triisopropanolamine	*q. s.*

Molecular proportions of the fatty acid were melted with the wax and liquid petrolatum and agitated with the aqueous solution of triisopropanolamine on a mechanical mixer for a few seconds. The cream was stirred occasionally until cool. After six months the creams were heated in an oven at 80° for 24 hours and the state of emulsification observed. The data are indicated in the following table:

TABLE III.—TRIISOPROPANOLAMINE CREAMS.

Fatty Acid Salt.	5.0%.		2.5%.		1.25%.		0.6%.		0.3%.		0.15%.		0.08%.	
	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
Caproate	−	−1½	−	−1½	−	−1	−	−1	−	−1	−	−1	−	−1
Caprylate	−	−1½	−	−1½	−	−1½	−	−1	−	−1	−	−1	−	−1
Caprate	+	−1½	+	−1½	+	−1½	+	−1	−	−1	−	−1	−	−1
Laurate	+	+2	+	+1½	+	−1	+	−1	−	−1	−	−1	−	−1
Myristate	+	+1½	+	+1½	+	+1	+	−1	−	−1	−	−1	−	−1
Palmitate	+	+1½	+	+1½	+	+1½	+	−1	+	−1	−	−1	−	−1
Stearate	+	+2	+	+2	+	+1	−	−1	−	−1	−	−1	−	−1
Oleate	+	+1½	+	+1	+	+1	+	−1	+	−1	+	−1	+	−1

Legend: + = good emulsions; − = separated; column A = state of emulsion when fresh, column B = the color after 5 months; numbers = relative color from white (1) to amber (4).

SUMMARY.

A study of the salts of triisopropanolamine indicated that their properties made them similar and slightly superior to triethanolamine as emulsifying agents for liquids and creams. The salts are softer than those of triethanolamine and soluble in liquid petrolatum. Creams prepared with these salts did *not* discolor with age to the extent found with triethanolamine creams.

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II. MIXED ISOPROPANOLAMINES.

Mixed isopropanolamine is a viscous, water-soluble liquid with a slightly ammoniacal odor. It consists of a mixture of mono-, di- and tri-isopropanolamines with the following physical properties:[2]

Specific Gravity	1.004–1.010
Equivalent Weight	135–145
Color	Not more than 7 yellow and 2 red Lovibond (100 mm. tube)
Monoisopropanolamine content	14 ± 2%
Diisopropanolamine content	43 ± 4%
Triisopropanolamine content	43 ± 4%

Characteristics of Salts.—Salts of mixed isopropanolamines were prepared by heating molecular equivalents of commercial quality fatty acids with the amines at a temperature sufficiently high to melt the fatty acids. In all cases heat was evolved in the reaction.

Stearate.—Pale straw color, solid, softer than either salts of triisopropanolamine or triethanolamine, very slight odor; soluble in hot water, alcohol and liquid petrolatum.

Myristate.—Water-white, slightly viscous liquid, faint odor, soluble in water, alcohol and liquid petrolatum.

Oleate.—Amber, liquid, more fluid than the oleate of triisopropanolamine, soluble in water, alcohol and liquid petrolatum.

Characteristics of Pure Salts.—Salts were prepared using molecular equivalents of mixed isopropanolamines and fatty acids (Eastman) and the data obtained in the same manner as triisopropanolamine previously reported.

TABLE I.—CHARACTERISTICS OF PURE SALTS.

Fatty Acid Salt (0.14%).	Lather (22°).	Surface Tension (40°).	*p*H.
Caproate	0	55.5	6.1
Caprylate	0	49.0	6.3
Caprate	15%	37.2	..
Laurate	100%	25.8	7.1
Myristate	28%	24.4	8.4
Palmitate	20%	26.6	9.1
Stearate	5%	33.8	9.2
Oleate	48%	27.7	8.4
Free base			9.2

TABLE II.—EMULSIONS (25% HEAVY MINERAL OIL).

Fatty Acid Salt.	5%.	2.5%.	1.0%.	0.5%.	0.25%.
Caproate	–	–	–	–	–
Caprylate	25% C 4% O	7% C 19% O	–	–	–
Caprate	35% C	25% C	25% C 3% O	20% C 5% O	7% C 18% O
Laurate	25% C	25% C	25% C	25% C	5% C 20% O
Myristate	+	50% C	30% C	28% C	24% C 1% O
Palmitate	+	+	+	50% C	25% C
Stearate	+	+	+	32% C	24% C 1% O
Oleate	+	+	50% C	30% C	30% C 1% O

Legend: + = complete emulsion; – = entirely broken; C = cream; O = oil; T = trace.

Cosmetics.—Creams were prepared in the same manner as reported with triisopropanol amine using the basic formula:

White Wax.....	15 Gm.
Heavy Liquid Petrolatum.....	50 cc
Fatty Acid (Eastman).....	*q. s.*
Distilled Water.....	30 cc.
Mixed Isopropanolamines.....	*q. s.*

The results are indicated in the following table:

TABLE III.—MIXED ISOPROPANOLAMINE CREAMS.

Fatty Acid Salt.	5%.		2.5%.		1.25%.		0.6%.		0.3%.		0.15%.		0.08%.	
	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
Caproate	−	−1	−	−1	−	−1	−	−1	−	−1	−	−1	−	−1
Caprylate	−	−1	−	−1	−	−1	−	−1	−	−1	−	−1	−	−1
Caprate	+	+2	+	+2	+	+2	+	−2	−	−	−	−	−	−
Laurate	+	+1½	+	+1	+	+1	+	+1	+	+1	+	+1	+	−1
Myristate	+	+1½	+	+1	+	+1	+	+1	+	+1	+	+1	−	−1
Palmitate	+	+2	+	+1½	+	+1	+	+1	+	+1	−	−1	−	−1
Stearate	+	+4	+	+3	+	−2	+	−1	+	−1	+	−1	−	−1
Oleate	+	+3	+	+3	+	+2	+	+1½	+	+1	+	+1	+	+1

Legend: + = good emulsions; − = separated; column A = state of emulsion when fresh, column B = the color after 5 months; numbers = relative color from white (1) to amber (4).

In order to compare the cosmetic emulsifying power of the isopropanolamine with the triethanolamine, creams were prepared in the same manner using triethanolamine:

TABLE IV.—TRIETHANOLAMINE CREAMS.

Fatty Acid Salt.	5%.		2.5%.		1.25%.		0.6%.		0.3%.		0.15%.		0.08%.	
	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.	A.	B.
Laurate	+	+3	+	+2	+	+1	+	+1½	+	+1½	+	+1	?	−1
Myristate	+	+3	+	+2	?	−1½	−	−1	−	−1	−	−1	−	−1
Palmitate	+	+1½	+	+1	+1	+1	−	−1	−	−1	−	−1	−	−1
Stearate	+	+2½	+	+2	+	+1½	?	−1	?	−1	−	−1	−	−1
Oleate	+	+3	+	+2½	+	+1½	?	−1	?	−1	−	−1	−	−1

Detergency.—Detergency tests were conducted only on the oleates in order to compare them with triethanolamine. The experiment was conducted in the same manner as employed for trietholamine (1):

TABLE V.—DETERGENCY.

Amine Oleate.	Original Soil.	First Wash.	Soil Removed.	Second Wash.	Soil Removed.
Triisopropanolamine	27.5	13.8	13.7	8.2	19.3
Mixed Isopropanolamines	30.5	16.2	14.3	7.0	23.5
Triethanolamine	36.8	8.9	27.7	6.4	30.4

SUMMARY.

A mixture of di-, tri- and monoisopropanolamines, consisting of approximately 43% of the first two and 14% of the latter, possessed greater emulsifying power either for pharmaceutical emulsions or cosmetics than triisopropanolamine or triethanolamine. Unlike triethanolamine, it appears that the myristate of isopropanolamines is superior to the laurate as an emulsifying agent and possesses lower surface tension. Salts of mixed isopropanolamines were softer than either those of triisopropanolamine or triethanolamine and were lighter-colored than the latter. Creams containing mixed isopropanolamines did not become colored on aging to the extent found in triethanolamine creams.

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PHARMACY AND RELIEF MEDICINE IN PENNSYLVANIA.*

BY E. P. GUTH.[1]

Throughout the entire United States, the problem of giving adequate medical assistance to persons on relief, has been dealt with in several ways, by the various authorities involved. In Pennsylvania, in September 1938, the Department of Public Assistance began a program giving medical assistance to persons on relief, by using the already established professional healing arts agencies. This program provides for necessary non-institutional medical care for public assistance cases in all counties of the Commonwealth. The State enlisted all the constituted elements of professional organizations in beginning its program. It plans to allow these organizations to continue the policy as long as the professions themselves render satisfactory control. All duly licensed members of the healing arts professions are eligible to participate as long as they indicate their willingness to coöperate with other members in conduct of the program. This system allows for free choice of practitioner by the patient. The physician is instructed to exercise his own opinion as to what constitutes adequate medical care. He is charged with the responsibility, to control an inflated demand for services. He has the right to refuse service when he feels none is required.

Briefly, the program operates as follows. A person on Public Assistance rolls may call on the physician of his choice, or he may have the physician call at his home. (Physicians, dentists, nurses, osteopaths and homeopaths operate on set fees.) The physician may administer any treatment necessary, or he may write a prescription on special forms supplied by the state. Five copies of the prescription are written, four copies of which are given to the patient who must then take or mail them to the County Office of Public Assistance for validation, before he presents them to the pharmacist for filling. In emergencies, the prescription may be filled before validation. The patient signs for the medicine and the pharmacist completes the blanks with the necessary information (name of store, address, name of pharmacist filling the prescription, number, date, price, etc.), and forwards three copies to the Sub-Committee of the County Healing Arts Assistance Committee, which committee will review and approve the price of the medicine. It is also the duty of this committee to disapprove invoices for services, which seem to have been rendered when they should not have been. Any disputes arising are to be settled by the County Board of Public Assistance and the County Healing Arts Assistance Committee. The bills, when approved, are forwarded to the County Healing Arts Assistance Committee. This Committee must keep the total expenditures of the County within the allotted sum.

The program is financed through state relief appropriations, each County being allotted a definite sum each month. Should the sum be sufficient to cover all expenditures, all bills are paid in full. If the amount is not adequate to cover all bills, then invoices for medicine are paid in full and invoices for services of physicians, dentists, etc., are pro-rated. Any surplus money remaining after all invoices are paid reverts to the Department of Public Assistance.

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The medicinals permitted to be prescribed (Effective June 1, 1939) are U. S. P. and N. F. compounds and preparations, Insulin, Zinc Insulin, Insulin Syringes and needles, Cofron Elixir, Ipral Tablets, Lextron Capsules, Lirimin Capsules, Nembutal Capsules, Oratal Sodium Capsules, Sulfanilamid Tablets, Ventriculin, Bandages and other similar surgical supplies. (Prior to June 1, all proprietaries were permitted to be prescribed.) The pricing of prescriptions is based on a general formula. For prescriptions containing one official compound or preparation, the price is obtained by adding to the cost of ingredients, five cents for container, and twenty-five cents for compounding fee; for prescriptions containing more than one official compound or preparation the compounding fee is fifty cents; for proprietaries, a 30% mark-up is permitted with no mark-up less than twenty-five cents; Insulin and Zinc Insulin, all sizes, fair trade; Insulin Syringe and two needles, $1.35; Insulin needles, 15c each or 2 for 25c; Cotton, surgical gauze, etc., carry a 30% mark-up. Exceptions to the above prices are Cod Liver Oil, Mineral Oil and Rubbing Alcohol pints, and Milk of Magnesia, quarts, which price shall not exceed 50c. Serums, antitoxins, vaccines and drugs for syphilitics cannot be prescribed as these are furnished either by the State Department of Health, or by the city, as is the case with Philadelphia and Pittsburgh. Relief prescriptions may not be refilled.

Statistics on costs for the operation of the program in the state, are now available for the first six months, beginning with September 1938, and ending February 1939. The total allocation for the state in September 1938, was $58,925. Total expenditures were $16,535 of which the pharmacists received $722. In February 1939, the total allocation was $141,640. Total expenditures were $141,233 of which $20,053 were paid to the pharmacists. For the first six months, the pharmacists of the state received a total of $61,383. It is indicated that expenditures for medicine in March and April will equal or exceed the total expenditures for the first six months of the operation of the program. Since this is a sizable figure, a survey was made by the writer, in Pittsburgh in order to get some idea as to the amount of business done in relief prescriptions in this area, and to obtain a cross-section of opinion of pharmacists as to what they think of the program in general. Pharmacists were contacted by questionnaire and by personal visit. The local committee members who were also contacted were able to supply valuable information.

As would be expected, the stores doing the most of the relief prescription business were located in the poorer districts. Those in better districts filled none, or too few to be of consequence. Stores in communities that would be considered average communities, filled from five to fifteen relief prescriptions per month. One store in a poor section filled 550 relief prescriptions in one month; another store reported filling around 3000 since the beginning of the program; other stores reported averages of 200 per month. In Allegheny County, approximately 56% of the pharmacists are participating in the plan at the present time. In September 1938, with 14% of the pharmacists in Allegheny County participating the total amount received by them for medicines was $239. By March 1939, approximately 56% of the pharmacists were participating. They will receive about $12,000. Figures for April are not yet available, but indications are that expenditures for

medicine in this month will greatly exceed those of March. The local committee expects a decline during the summer months.

Payment of bills by the state has been delayed about four months. This delay is causing considerable hardship on those pharmacists who have filled many relief prescriptions. In some instances the credit of the pharmacist has been impaired. One pharmacist claimed to have had more than $2000 due him from the state. Other pharmacists having smaller amounts overdue are not seriously affected financially, but nevertheless they are disturbed over the delay in payment. Slowness in payment is partly the fault of the state, and partly the fault of the pharmacist. All bills must be in the hands of the local committee by the fifth of the month following treatment. As a result all the bills come in at once. These bills are first segregated as to district, then checked for price and validity. Pharmacists on this local committee donate their time to this work, and most of them can work only one or two hours a day. The pharmacists, themselves, delay the work by not adhering strictly to the requirements of the plan. When the pharmacist does not price the prescription correctly, or leaves off some other required information, the prescription is returned to him for correction or completion. At present, four weeks are required for checking of all invoices by the local committee. Another four to six weeks are used by the county and state committees.

So much for the working of the program up to the present time. Volumes of statistics are available and much could be said about them but the purpose of this survey was to get some idea as to what the pharmacist thinks about the plan and where it may lead. It is not inconceivable that the present program may result in the establishment of socialized medicine and pharmacists were questioned on this subject. About 40% of the pharmacists interviewed believe that socialized medicine is necessary and that this relief plan is leading to that end. About 30% believe that socialized medicine will not come; the remainder had not come to any conclusion. It was usually the younger pharmacist who believed that socialized medicine was not only necessary but inevitable. Another question put to the pharmacist was: Is the necessity of prescribing official drugs on relief prescriptions any influence on the type of drugs prescribed on regular prescriptions? The majority of pharmacists were agreed that physicians were becoming more U. S. P. and N. F. conscious as a result of this program. An interesting point in this connection was that for a while the physicians were allowed to prescribe any proprietary, because they complained that they could not give adequate medication when limited to official drugs. As a result, many expensive preparations were prescribed, some costing as much as $15. It soon became evident to the physicians however, that this procedure was taking money out of their own pockets, because the pharmacist was getting his full price for the medicine, and the more money paid out for medicine left less to be paid out to the physician. For April, one of the months in which proprietaries were permitted, the physician will receive approximately 36% of his bill submitted. Some pharmacists have advertised for relief prescriptions, believing that it would have a general effect on their regular business, but any increase in business as a result of this procedure has been so slight as to be inconsequential. The principal effect has been a general increase in prescription stock. Other pharmacists do not care to participate in the plan either because they do not want to be bothered with it or because they are opposed to relief systems in general.

The members of the local committees recognize many faults with the operation of the present program and are discussing ways to correct them. They believe that an allotment covering twelve months instead of the monthly allotment would give them a better opportunity to meet the required expenditures. Some members think that the pharmacist's compounding fee should be subject to reduction as is the service fee for the practitioner in case the allotment is not sufficient to pay all the bills in full. The present plan of paying the pharmacist in full and reducing the physician's service charge is not conducive to complete coöperation between the pharmacist and the physician. More exact methods of pricing prescriptions, especially as to cost, are necessary. More efficient methods of handling the thousands of invoices must be devised. Finally each member of the healing arts professions must see to it that his own conduct in participating in the system is above reproach. Certain bad practices, wilful or unwilful, by a few, and these are not necessarily all pharmacists, should stop at once if the operation of the program is to remain in the hands of present constituted agencies.

THE HOSPITAL PHARMACIST AND THE DIABETIC.*

BY MITCHELL STOKLOSA.[1]

Eighteen years ago, insulin was isolated by Banting and Best who succeeded in preparing an extract which, when injected into depancreatized dogs, was able to keep them alive. This epoch-making discovery by the eminent Toronto workers proved conclusively that diabetes mellitus is "a disturbance of metabolism caused by a deficiency in insulin secretion from the pancreas." As a result of these successful research endeavors, insulin was made available to the world; indeed, it came to the rescue of the diabetic. Four years ago, medical science took another step forward in the treatment of diabetes when Dr. Hagedorn of Copenhagen made known to the medical world the isolation of a new preparation called protamine insulin.

Research workers in manufacturing pharmacy, being accorded the privilege of coöperating with the University of Toronto, have contributed to the cause by their development of a process for the manufacture of insulin on a large scale; further, pharmaceutical research has coöperated in carrying on successful investigations which have resulted in the preparation of a purer, a more nearly uniform and a more nearly stable hormone; and finally, fruitful research in Pharmacy has made insulin commercially available through the pharmacist.

Because the diabetic depends upon the pharmacist for his supply of insulin, it seems inevitable that he will also turn to him for all other special requisites. Obviously then, the rôle of the pharmacist in relation to the diabetic patient is one of aid and service. Possessing a comprehensive knowledge of this prevalent disease and a thorough understanding of the many perplexing problems which confront those who are afflicted with it, the pharmacist can do his part in helping the dia-

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betic to live a happier and a more normal life, not only by supplying him with special medications, but also by offering to him valuable advice and helpful explanations concerning various diabetic requisites.

A hospital pharmacist in an institution where a relatively large proportion of the medical work falls within the field of diabetes must unquestionably focus some attention on that phase of his work which bears a relation to diabetes. A few statistics from the pharmacy at the New England Deaconess Hospital, where the Diabetic Clinic under the direction of Dr. E. P. Joslin occupies a prominent position among other medical groups, will serve to substantiate the fact that a hospital pharmacist, too, must render service to those who are suffering from diabetes and are in need of special medications and supplies.

During the past few years, an average of six hundred gallons of Benedict's Qualitative Solution have been manufactured annually in the hospital pharmacy to meet the requirements of the chemical laboratories, of the hospital wards and of the diabetic store which is located in the main lobby of the hospital and which is operated as an integral part of the pharmacy department. Thousands of vials of insulin, both the regular and the protamine, have been dispensed to diabetic wards and to patients at the time of their discharge from the hospital. Hundreds of insulin syringes and thousands of insulin needles have been dispensed to hospital floors and to patients through the diabetic store.

Perhaps a few glimpses into the daily routine which is followed by the hospital pharmacist will serve as a sketchy outline of his general duties. Every morning, drug baskets which are sent to the drug room from various wards are filled with floor-stock pharmaceuticals. Requisitions for special medications are also filled during the morning. The balance of the working day is devoted to the manufacture of stock solutions, reagents and stains, sterile solutions and ampoules, and to the filling of special orders from the diabetic store.

Insofar as the hospital pharmacy relates to the diabetic, it is quite evident that the pharmacist must meet the needs of the patient during his hospitalization and at the time of his discharge from the hospital. Consequently, his specialized duties fall into two classes: *first*, the preparation and dispensing of medications to diabetic wards; and *second*, the preparation and dispensing of special medicines and supplies to the diabetic store where they are placed at the disposal of the patient when he leaves the hospital.

Diabetic wards are supplied not only with routine floor-stock pharmaceuticals which include various solutions, tablets, ointments and ampoules, but also with the foliowing items: Benedict's Qualitative Solution which is used on the floors in testing urine for sugar; ten per cent solution of ferric chloride which is used in testing the urine for diacetic acid; supplies of insulin; saccharin tablets; uncoated rhubarb tablets; lanolin; and other diabetic requisites. Included in the list of supplies for diabetic wards is the insulin reaction box which contains the following: ampoules of dextrose, ampoules of caffeine with sodium benzoate, ampoules of adrenalin, intravenous and hypodermic needles, a two-cc. and a twenty-cc. syringe, medicated alcohol and tincture of iodine. Chemically pure, anhydrous dextrose is packaged in lots of 50 and 100 Gm.; these weighed amounts of dextrose are sent to the floors where they are used for glucose tolerance tests.

Worthy of consideration are the medications and supplies which the hospital pharmacist dispenses to the diabetic foot room or the so-called "Beauty Parlor for Diabetic Feet." An examination of a drug basket which is sent to the pharmacy for replenishment will reveal the need for some of the following special requisites: Dakin's Solution, Compound Tincture of Benzoin, Tincture of Metaphen, Solution of Hexylresorcinol S.T. 37, lanolin, rubber cement, lamb's wool, paper slippers, woolen socks, ointment "2230" and foot powder "1923."

Relatively large quantities of Dakin's Solution are dispensed daily to the foot room. This solution is freshly prepared every four or five days from a twelve per cent solution of chlorinated soda which is buffered with saturated solution of boric acid. It is assayed, tested for alkalinity and is dispensed in amber-colored bottles. Dakin's Solution is used for irrigations and postoperative dressings on diabetic patients. Other chlorogenetic compounds, such as dichloramine and azochloramid, which is prepared as a 1:3300 solution in normal saline, have found a specific use in the diabetic foot room. Rubber cement, which is filled into collapsible tubes in the pharmacy, is used in conjunction with Dakin's dressings; it is put under sterile boric strips which are placed around wounds to prevent irritation; this procedure causes the boric strips to remain in place. The large amounts of lanolin dispensed by the pharmacist to this ward are used to keep the skin of diabetics' feet soft and free from scales and dryness. Lamb's wool and woolen socks are among the special supplies which are requisitioned from the hospital pharmacy by the foot-room nurse. Lamb's wool, because of its very soft texture, finds several uses in the diabetic foot-room; it may be used around soft corns to prevent any pressure upon the corn and so cause its disappearance; or, it may be used for overlapping toes, and for protecting dressings and toe nails. Woolen socks are used on diabetic amputation cases, the sock being placed on the good foot in order to prevent lesions; since the patient has a tendency to rub his good foot, this protection prevents the formation of any lesion which could possibly result from rubbing an unprotected foot.

A number of medications which are used to promote healing are dispensed to the diabetic foot room. These include such preparations as thioglycerol, allantoin and cod liver oil ointment. Zinc peroxide in suspension and in ointment form has also found a use in the foot room. Because not all lots of zinc peroxide are effective, the following simple test has been suggested for determining whether a given lot is active: "Shake a few Gm. of the powder in a test-tube filled with water and allow it to stand. The effective zinc peroxide forms a suspension which precipitates rapidly, leaving the supernatant liquid clear, and forms visible bubbles of oxygen in the precipitate within two or three hours." The manufacturers of zinc peroxide advise heating the powder to 140° C. for four hours before it is used; the process presumably activates the chemical. Twenty-gram lots of this powder are heated in the pharmacy at the suggested temperature; the powder is then sent to the floors where a suspension of it is made with sterile distilled water when needed. The formula for the ointment which has been used is as follows:

Zinc Peroxide	20.0
Liquid Petrolatum	20.0
Balsam of Peru	5.0
Petrolatum	30.0

Since epidermophytosis or athlete's foot is particularly objectionable in diabetics, special medications are prepared in the pharmacy for its treatment. For mild cases, a ten per cent solution of mercurochrome has been dispensed for use in the foot room; for more severe cases, a special ointment and foot powder have been extensively used. The formulas for these two preparations are as follows:

Ointment "2230."		Foot Powder "1923."	
Salicylic Acid	2.0	Salicylic Acid	2.0
Precipitated Sulfur	2.0	Benzoic Acid	2.0
Petrolatum	30.0	Talc	100.0

Other medications finding a specific use in the diabetic foot room include Compound Tincture of Benzoin which is used for dressings on wounds having a drainage and Tincture of Metaphen which is used preoperatively.

The services of the hospital pharmacy, insofar as the diabetic patient is concerned, have extended even to the diabetic kitchen. The dietary department requisitions the following special items from the drug room: mineral oil which is used for the preparation of diabetic salad dressing, saccharin tablets, diabetic ginger ale, cracked cocoa and cocoa shells which are used for the preparation of diabetic beverages.

The diabetic store where the patient purchases his medications and supplies is, as was previously mentioned, an integral part of the hospital pharmacy. When the patient is ready to leave the hospital, the diabetic nurse sends the following list to the pharmacy store and checks on it those items which the patient needs to take home with him:

Supplies to Be Purchased by the Patient at Discharge.—Benedict's Solution, test-tubes, test-tube rack, test-tube brush, droppers, medicated alcohol 70%, absorbent cotton, insulin syringe insulin needles, regular insulin, protamine zinc insulin, enamel boiling-dish, "Hypo-pak" traveling kit, gram scale, saccharin tablets gr. 1/4, diabetic mayonnaise, uncoated rhubarb tablets, mineral oil, sterile gauze, S.T. 37, mercurochrome solution 10%, lanolin.

It is the duty of the hospital pharmacist to keep the diabetic store well supplied with all of these special requisites in order to meet the needs of the patients.

In the diabetic store, the pharmacist can further assist the patient by offering helpful explanations about the use and care of the various types of syringes and hypodermic needles, by offering advice concerning the proper type of alcohol to be used for the sterilization of needles, by demonstrating and explaining various types of diabetic scales which the patient can use for weighing his food, and by offering worthy suggestions concerning any special diabetic supplies.

The pharmacy store places at the patient's disposal an assortment of sugar-free candies such as: brittle, lollypops and gum drops; diabetic beverages; and a wide variety of diabetic foods including washed bran and various flours. It also offers to the patient a very handy "Hypo-pak" traveling kit in which he can carry an insulin syringe, needles, alcohol, a cotton swab and insulin; this kit is very compact and can be carried conveniently by the diabetic while he is away from home. Dr. Joslin's Diabetic Manual is the standard text which the patient is advised to read; copies of this book, which has enjoyed a wide circulation among diabetics, are supplied by the hospital pharmacy.

Noteworthy is the fact, that large quantities of diabetic mayonnaise have been manufactured in the pharmacy and dispensed in the diabetic store. The formula for this salad topping, a favorite with diabetics, is as follows:

Eggs	12 yolks
Lemons	4 (juice of)
Heavy Mineral Oil	120 ounces
Sodium Chloride	20 Gm.
Mustard, powdered	8 Gm.
Acetic Acid 4%	to taste

These few glimpses into a hospital pharmacy in an institution where diabetic treatment is outstanding will serve, it is hoped, as an indication of the duties of the pharmacist in relation to the diabetic patient. His duties are, beyond any question of doubt, duties of service; indeed, a specialized service; *primarily*, to diabetic wards and floors by supplying them with necessary pharmaceuticals; *secondly*, to the diabetic by making available to him various medicines and supplies; and *finally*, to staff physicians by offering to them assistance and ready coöperation when they call on him for information and suggestions concerning diabetic medications.

INCOMPATIBILITIES IN PRESCRIPTIONS. II. A SURVEY OF THE FREQUENCY OF OCCURRENCE OF VARIOUS TYPES OF INCOMPATIBILITIES.*[1]

BY WILLIAM J. HUSA[2] AND CHARLES H. BECKER.

Although numerous surveys have been made regarding various phases of prescription work such as the frequency of occurrence of various ingredients and the prices charged, very little systematic study has been made of the frequency of occurrence of various types of incompatibilities. The purposes of the present survey on incompatibilities were as follows: (*a*) to obtain data as to the types of incompatibilities which occur most frequently, (*b*) to ascertain which drugs or classes of drugs cause most frequent trouble in prescriptions, and (*c*) to furnish data to teachers of Pharmacy regarding the types of incompatibilities in prescriptions that should be emphasized in teaching.

METHODS USED IN PRESENT SURVEY.

The prescriptions chosen for study were those appearing in the Prescription Forum of the *American Druggist* during the years 1932 to 1938. The incompatibilities were classified into groups according to the classification used in "Husa-Pharmaceutical Dispensing" (1). In addition to this the ingredients causing the incompatibilities were classified into eleven groups. Each prescription was carefully studied and the data regarding the type of incompatibility and nature of incompatible ingredients were entered on suitable cards for tabulation.

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* Presented before the Section on Education and Legislation, A. PH. A., Atlanta meeting.

[1] This paper is based on part of a thesis presented to the Graduate Council of the University of Florida by Charles H. Becker, in partial fulfilment of the requirements for the degree of Master of Science in Pharmacy.

[2] Head Professor of Pharmacy, University of Florida.

RESULTS OF PRESENT SURVEY.

From the prescriptions examined, 412 prescriptions showing at least one incompatibility were selected for further study. In this number of prescriptions there were 509 incompatibilities or an average of 1.23 incompatibilities per prescription.

The frequency of occurrence of various types of physical incompatibilities is given in Table I.

TABLE I.—PHYSICAL INCOMPATIBILITIES. OCCURRENCE IN 412 INCOMPATIBLE PRESCRIPTIONS.

Type.	Number of Occurrences.	Percentage (of 509 Incompatibilities).
Incomplete solution	121	23.77
Precipitation	58	11.39
Separation of an immiscible liquid	37	7.27
Liquefaction of solid ingredients	16	3.14
Wrong form prescribed	11	2.16
Gelatinization	0	0
Total	243	47.73

Table I indicates that about half of the incompatibilities studied were physical incompatibilities. The types of physical incompatibility, in order of frequency of occurrence were as follows: incomplete solution, precipitation, separation of an immiscible liquid, liquefaction of solid ingredients and wrong form prescribed. Gelatinization did not occur even once in the prescriptions studied.

The frequency of occurrence of various types of chemical incompatibilities is given in Table II.

TABLE II.—CHEMICAL INCOMPATIBILITIES. OCCURRENCE IN 412 INCOMPATIBLE PRESCRIPTIONS.

Type.	Number of Occurrences.	Percentage (of 509 Incompatibilities).
Formation of a precipitate	119	23.38
Evolution of a gas	68	13.36
Color changes	39	7.66
Explosive combinations	16	3.14
Cementation of ingredients	8	1.57
Separation of an immiscible liquid	3	0.59
Development of heat or cold due to chemical change	3	0.59
Other types of chemical change	2	0.39
Hydrolytic changes	1	0.19
Invisible changes	1	0.19
Development of poisonous substances	0	0
Total	260	51.06

As shown in Table II, about half of the incompatibilities studied were chemical incompatibilities. The most frequently occurring types were as follows: formation of a precipitate, evolution of a gas, color changes, explosive combinations and cementation of ingredients. Hydrolytic changes were encountered more frequently than the table would indicate but in most cases hydrolysis resulted in precipitation and the incompatibility was classified as formation of a precipitate.

With reference to therapeutical incompatibilities, dangerous doses were found 6 times or in 1.18 per cent of the incompatibilities studied.

In classifying the substances causing incompatibility into groups, inorganic salts were classified under the heading of the positive or negative ion responsible for the incompatibility. Other substances were classified as shown in Table III.

TABLE III.—CLASSES OF DRUGS RESPONSIBLE FOR INCOMPATIBILITIES.

Class.	Number of Occurrences.	Percentage of Total.
General pharmaceutical preparations	237	20.66
Negative ions	195	17.00
Positive ions	178	15.52
Organic chemicals	156	13.60
Simples (beeswax, acacia, etc.)	130	11.34
Pharmaceutical preparations containing free acid	80	6.97
Proprietaries	69	6.02
Alkaloids	60	5.23
Pharmaceutical preparations containing free alkali	38	3.31
Glandular products	3	0.26
Dyes	1	0.09
Total	1147	100.00

The ten individual ingredients responsible for the greatest number of incompatibilities in the prescriptions studied are as follows: distilled water, sodium bicarbonate, acetylsalicylic acid, liquid petrolatum, sodium phenobarbital, compound elixir of pepsin, sodium salicylate, aminopyrine, syrup of wild cherry and glycerin. Six of these ingredients, *i. e.*, distilled water, sodium bicarbonate, acetylsalicylic acid, compound elixir of pepsin, sodium salicylate and glycerin, are also on the list of the eleven most frequently occurring ingredients in prescriptions as shown in "The Prescription Ingredient Survey" (2). Approximately 75 per cent of the incompatible ingredients studied are official, a large majority being in the U. S. P.

The present survey gives no indication of the proportion of all prescriptions which are incompatible. However, in a study of 500 prescriptions, Taylor (3) found that incompatibility had to be taken into consideration in 62 prescriptions.

SUMMARY.

A survey was made to determine the frequency of occurrence of various types of incompatibilities. Physical and chemical incompatibilities occur with about equal frequency and together make up almost all of the incompatibilities, therapeutic incompatibilities rarely being a source of difficulty to the pharmacist.

The most frequently occurring physical incompatibilities are incomplete solution, precipitation, separation of an immiscible liquid and liquefaction of solid ingredients. The most common chemical incompatibilities are formation of a precipitate, evolution of a gas, color changes, explosive combinations and cementation of ingredients.

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(2) E. N. Gathercoal, "The Prescription Ingredient Survey," AMERICAN PHARMACEUTICAL ASSOCIATION, pages 16, 17, 19 and 22.

(3) A. C. Taylor, JOUR. A. PH. A., 19, 1003 (1930).

PRESCRIPTIONS AT YOUR FINGER TIPS.*

BY KELLY E. BENNETT.[1]

Much is heard these days concerning the separation of professional pharmacy from the more commercial and commoner type of drug store. It should not be forgotten, however, that a great percentage of the drug stores of the country are located in towns too small in size to support a strictly professional establishment. This fact is apparently overlooked by many proponents of a division.

The discussion of this subject seems far less important than the attention that could be given to the development of what is available to all types of pharmacists if they saw fit to reach out and obtain it. By that is meant real, worthwhile, sustained effort to emphasize medical products, biologicals, prescription compounding and merchandise related to professional pharmacy. The course of least resistance, however, rather than necessity appears all too often as the factor that stamps a drug store as a service station with long hours rather than a source of supply for physicians and their patients.

It should be clearly understood that there is no intention on my part to belittle so-called commercial pharmacy. Most certainly it has its place and satisfies a demand on the part of the public. It is, however, a highly competitive field. Fountain pens, stationery, toiletries and cosmetics are by no means exclusive drug-store merchandise. Even the soda fountain, and sandwich unit, a good money-maker when properly managed, is spotted in a dozen places on main street in almost any town.

What is least competitive? Many will agree at once that it is the drug store business as such. But, comes the qualifying thought, there isn't enough volume because the proprietor has not bestirred himself to study ways and means of going after it and digging it out. Of course the pharmacist can't create illness, and illness is the source of prescriptions. It is amazing, however, how much real drug business there is that has little or nothing to do with the sick bed.

If you would go over the profit-and-loss statement of drug stores situated in different sections of the United States, you would find one outstanding fact which is consistently established. Stores that enjoyed handsome returns from what appeared to be comparatively small or just fair volume proved invariably to be the stores that majored in prescription and drug store services; while other stores doing five or ten times the volume of the more professional stores are dealing in merchandise of all types, sometimes showed an actual loss or only a small profit.

In a national survey there appeared an evaluation of the actual figures of 152 drug stores that filled 651,181 prescriptions in 1937. The average per store over a

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[1] Pharmacist, Bryson City, N. C.

period of a year was only 4284 and the average price of 90 cents. The average total sales volume per store was around $30,000. These stores were taken just as they came. No attempt was made to produce a showing one way or another.

The margin on sales average 34.3 per cent for the entire store. Of this 34.3 per cent margin, which amounted to $1,597,777.37, the prescription department accounted for $352,015.03, or 22.3 per cent. Lets bear in mind that this showing was in drug stores where the average prescription volume yet produced 22.3 per cent of the total gross margin. What better proof could be offered that the drug business is profitable.

Assuming that the point has been proved, what is there to be done about it? There's where the rub comes because specific ways and means will not apply everywhere. As with any other professional establishments, such as the physician, the engineer or the lawyer, the road to success is a long one. Perhaps that is one of the reasons why so few pharmacists stick to their calling. They are impatient. Time is required—plus patience, plus demonstrations of cleanliness, dignity, thoughtfulness, willingness to serve. The store manner of the pharmacist and those associates engaged in interpreting his ideals in conducting a pharmacy is comparable to those rare assets of a physician—his bedside manner. Most of us become so close to our duties that we become neglectful of our opportunities. For, example, every pharmacist has it within his power to increase the confidence of the patient in the efficacy of a prescription merely by the way he handles it, by a short remark complimentary to the physician who wrote it, or through an expression of hope that it will prove effective. Little things such as this are far more important than most of us realize. Many times each day opportunity is provided to add a few bricks to the foundation of a drug store's reputation. The multiplicity of such little things in the end is a greater contributor to prestige than the costlier and showier investment in commercial type establishments. How proud are you of your prescription department? If you are not proud of it, what keeps you from making such changes in it as are necessary to make you proud of it? Clean up, paint up and wash up. Keep the prescription desk clear. Don't let soiled graduates, mortars and spatulas accumulate in the sink. Be a good housekeeper. Take advantage of every opportunity and create a few besides, to ingratiate yourself with those in position to assist you in your ambitions. Show respect for your calling. Speak of your stock and of specific items intelligently and enthusiastically. Handle them with respect for what they mean to those who prescribe and use them. Get behind the labels of those manufacturers who show respect for you and for your calling and who deal with you fairly and create volume for you. Avoid indifference. Cooperate so that better results will follow the producer's efforts and thus assist you.

If you want the coöperation of physicians, and dentists you should try overlooking little peculiarities on the part of some of them. Handle the physician tactfully.

What avenues are open to the pharmacist to promote prescription business? Here local conditions and store location count for much. There is no universal rule that will apply. Definite policies, however, can be established. The store can seek the confidence of physicians, nurses, dentists and laymen, and study and apply ways and means to build that confidence. Once a year isn't enough. It should be continuous effort, shared by every employee in the store. Unless everyone in the

establishment has a thorough understanding of the objectives it may be that the proprietor will find himself at an uphill job.

Nothing counts for more in promoting prescription business than an immaculate, well-ordered prescription department, well lighted, well ventilated, spick and span at all times. The desk should be cleared completely following the finishing of each prescription. It is well to urge physicians to look in on your prescription department, and especially while you are compounding one of his prescriptions. do it tactfully; that is invite the doctor to see a new item, a utensil, an article in a journal or what not. The doctor may make little comment but an impression will be recorded. Your prescription merchandise counts much. The doctor may dispense cheap pharmaceutical products from his own office but he will be the first to notice and carry away a poor impression of a prescription department stocked with unknown brands. To himself he thinks, "so that's the kind of preparations they use in filling my prescriptions." Show enthusiasm over your stocks and your service. Talk about them, write about them. Never be forgotten. Each week in our local paper I use a four-inch double column space, in which I write about some phase of the prescription department, over the top I use these words: "Bennett's Chats About Your Health," and in closing: "See your doctor and dentist regularly."

Whether you call on physicians in the interest of your prescription department or not you should cultivate the friendship and respect of medical men, your endeavor being to impress them with your pharmacy and its service. You can scarcely expect support from those who know neither you nor your drug store.

Comparatively little business comes to any pharmacy of its own accord. There is a reason in everyone's mind for patronizing a particular drug store, grocery store, hardware establishment or any other type of service institution. It is up to the individual druggist, by this same token to provide the reason and keep right on providing the reason.

One way I keep in closer touch with both customer and physician is by the use of permanent prescription records. The physician keeps his history chart, why not the pharmacist his permanent prescription record? A record easily accessible to the pharmacist and the physician. My store is situated in a mountainous section of Western North Carolina, a mile and a half from the Great Smoky Mountains National Park on the north and surrounded on the east by the Balsam mountains, on the south by the Unaka mountains and on the west by the Nantahalas. Due to the formation of the mountains surrounding Swain County, parts of three adjoining counties do their shopping in Bryson City. With so many of my customers in the rural communities and not attaching any importance to proper care of their labels or number, it became necessary that I install some system in order that I might find their prescriptions when they were refilled. Many times the mothers have used the prescription bottles for nursing bottles, and later when they had occasion to have the bottle refilled, brought them back without label or number and expected me to fill it. Many a time have I had them come to the prescription window and ask for a prescription to be refilled, and upon my asking for the number or date of the original filling of the prescription, they would come back with the words, "You've got it in there. Can't you fill it?" Yes, we had the original prescription on file sandwiched between hundreds of others but finding it was next to impossible.

It was largely due to this fact that I installed a card index system, to have these

prescriptions at my finger tips when needed. My permanent prescription card system was put into operation on October 20, 1937, and has grown to some four hundred cards, with thousands of prescriptions recorded. It was installed primarily for my convenience in finding prescriptions to be refilled, where the customer had lost the number or forgotten the bottle or box at home.

It is a very simple system and the cards fit any standard card index file.

BENNETT'S DRUG STORE.

BRYSON CITY, N. C.

NAME
PARENT Bennett, Mrs. A. M. ADDRESS Bryson City, N. C.

Rx's. No's.	Filled.	Refilled.	By.	Physician.	Price.
125195	9–16–37	11–14–37	K	A. M. B.	Ptt.
128572–73	9–13–38	3–19–39	M	A. M. B.	Htt.
132697	9–10–38	2– 5–39	K	A. M. B.	Ptt.
139116	7– 7–39	8– 1–39	D	P. R. B.	Ptt.

This card is printed on two-ply white card board 3 x 5 inches, at the top is printed the name of my store and location, the patient's name and address and the father's, mother's or guardian's name. The number of the prescription or prescriptions. The date it was filled, or refilled, space for the initials of the pharmacist who filled the prescription, space for the name or initials of the physician writing the prescription and then the price of the prescription or prescriptions filled.

The index card has many advantages to the pharmacist, the physician and the dentist. To the pharmacist it gives a last check to the prescriptions he has compounded during the day. It also helps him to keep up with his prescription stock each day. In compounding prescriptions for accident cases where the insurance company requires one to furnish them with a complete statement of prescriptions and medicines, it is a very simple matter to take the customer's card and make your statement. In handling the Federal Physicians account of federal prisoners confined in the county jails, one is required to keep complete check on all prescriptions and at three-month intervals to make up a statement of all prescriptions furnished, and make copy of prescriptions and submit them with the statement to the federal physician. This is very easily done with the card system. It gives one a check on the people of the community who patronize the prescription department, and is one of the best mailing lists. The physician or dentist can call and find out what he has prescribed at some previous time for a patient, or he can drop by the store and examine the cards or prescription file. It has been a great labor-saver for me, and the physicians and dentists of this section are very enthusiastic over the system.

UNIVERSITY OF MISSISSIPPI STUDENT BRANCH.—The regular meeting was held on November 2nd. After completion of necessary business the speaker of the evening, Dr. J. B. Looper, was introduced. He gave a very interesting discussion tracing the developments in Medicine up to the present day, and explaining briefly some of the recent discoveries in Medicine.

. . . . . .

On December 6th the members of the Branch held their annual election of officers, with the following results: *President*, Harry Lynch; *Vice-President*, Horace Barnes; *Secretary*, Marguerite Holmes; *Treasurer*, Graden Senter; *Reporter*, Dorothy Flemmons; *Faculty Advisor*, W. W. Johnson.

MARGUERITE HOLMES, *Secretary*.

THE SQUIBB ANCIENT PHARMACY.

PHARMACY IN RETROSPECT. I.*

BY GEORGE URDANG[1] AND F. W. NITARDY.[2]

History of mankind is important to all of us; it is instructive, entertaining and frequently inspiring. Its value is augmented and its teaching illustrated by the concrete objects which have escaped the destructive influence of time. The history of Pharmacy, one phase of man's activity, is particularly important to pharmacists and practitioners of related professions. Here, too, the history is similarly enriched, in fact there is scarcely another profession whose past offers so many interesting items and mementos of old and of newer times. Here, indeed, the past is not dead; on the contrary, where such priceless heritages have been properly assembled, arranged and housed, we may say that the past lives with us to-day in all its ancient glory, charm and mystery.

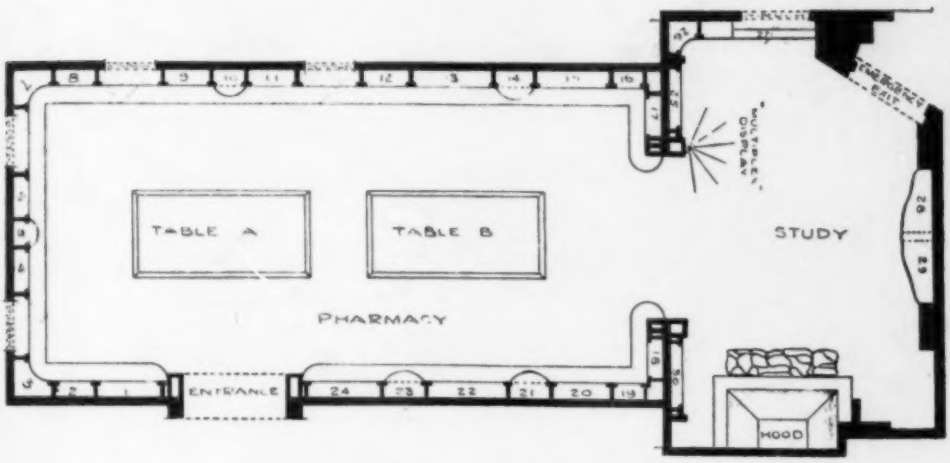

Fig. 1.—Floor Plan.

The applied arts through the ages found an amazingly large domain in the applied science of Pharmacy, thus adding beauty to usefulness and charm to its mystery; this helped to make pharmaceutical books, documents, containers, utensils and even fixtures reverently preserved relics, as well as favored subjects of collection, at least since about the second half of the 19th century.

Dr. J. A. Haefliger of Basle in his excellent book "Pharmazeutische Altertumskunde" *i. e.*, "Pharmaceutical Antiquarianism"[3] gives a "list of collections containing pharmaceutical antiquities" which he calls incomplete but which nevertheless includes, on 13 pages, about 250 public and private collections. In that list we find the present Squibb collection, which was formerly that of Dr. Jo Mayer

* Presented before the Section on Historical Pharmacy, A. PH. A., Atlanta meeting, 1939.

[1] 257 Langdon St., Madison, Wis.

[2] Vice-President in charge of manufacturing, E. R. Squibb & Sons.

[3] Zuerich, 1931, Buchdruckerie zur alten Universitaet.

of Wiesbaden, with the distinguishing statement: "The most important private collection in Germany." This important collection of pharmaceutical antiquities, which because of its completeness and wide variety is to a certain extent unique even in Europe, where most of such collections are found, was secured for American Pharmacy by E. R. Squibb & Sons in 1932 and is now an attraction in New York.

In view of the contribution to the history of Pharmacy represented by the

Fig. 2.—Pharmacy looking toward the Study.

Squibb Ancient Pharmacy, it seemed fitting to us, especially as no reasonably full description of this splendid collection has appeared in print in this country,[4] to prepare a series of short articles, dealing with it and several important groups therein.

Fully recognizing that such a collection to be a unit, rather than an accumula-

[4] A description was published in German in the *Pharmazeutische Zeitung* through a series of six articles by Dr. Fritz Ferchl in 1930 (Vol. 75, No. 2, 3, 14, 20, 32, 50). Dr. Chas. H. LaWall also wrote a series of papers on specific subjects involving this collection, one of which appeared in the A. PH. A. JOURNAL in June 1934 and three of which appeared in the *Journal of Chemical Education* during the same year. He also read a paper before the Historical Section of the A. PH.A. in 1934, which quite fully described the collection; however, that paper has not been published.

Fig. 3.—Pharmacy, looking toward the Mortar Section.

Fig. 4.—Closer view of pharmacy fixtures with majolica on shelves.

tion of items, has to be presented in an adequate and well-planned frame, E. R. Squibb & Sons created just such a frame, as will be evident from the following description of the rooms (Fig. 1—floor plan) of the "Ancient Pharmacy" which have been designed and constructed to blend harmoniously with the baroque style of the fixtures, and which quite successfully preserve the atmosphere of the ancient pharmacy.

Fig. 5.—Corner in the Study.

Fig. 6.—Shelves in Study.

To-day, as in days of old, the professional pharmacist uses mainly two rooms in the conduct of his business; one room for immediate contact with his customers, is the pharmacy as the layman sees it; the other room serves as his laboratory, workshop and study.

The "Ancient Pharmacy" likewise consists of two rooms: the "pharmacy" (Figs. 2, 3 and 4) devoted primarily to the display of shelfware and mortars, and the "study" (Figs. 5 and 6).

Most of the baroque fixtures of the pharmacy had, in the eighteenth century, been part of the old "Meunster Apotheke" of Freiburg im Breisgau (Germany). On its shelves rest the mortars, drug jars and bottles; and in the lower section are drawers once filled with the drugs, their nature now indicated by the inscriptions on the labels. The cherubs, on the upper ledge, belong to the old equipment, as does also the "Apotheke" sign.

Of early origin (about 1750) are also the stained glass windows with their wrought-iron frames and colorful painted glass insets of the various Hessian-Nassau coats of arms. The four chairs in the "pharmacy" are of the same period.

The ceiling, with its huge beams and colorful decorative painting, is adapted from authentic illustrations of rooms of that period. The lighting fixtures are new but suggest oil lamps rather than modern electric lights.

To complete the illusion of antiquity, the floor of both rooms is laid with old oak planks.

Of the furnishings of the "study," the table (Fig. 6) and the chairs (Fig. 7), the baroque consoles flanking the table, the lamps and the lanterns, are all parts of the old collection. The fireplace with its hood (Fig. 8) and the massive doors of the study are authentically fashioned according to the old patterns.

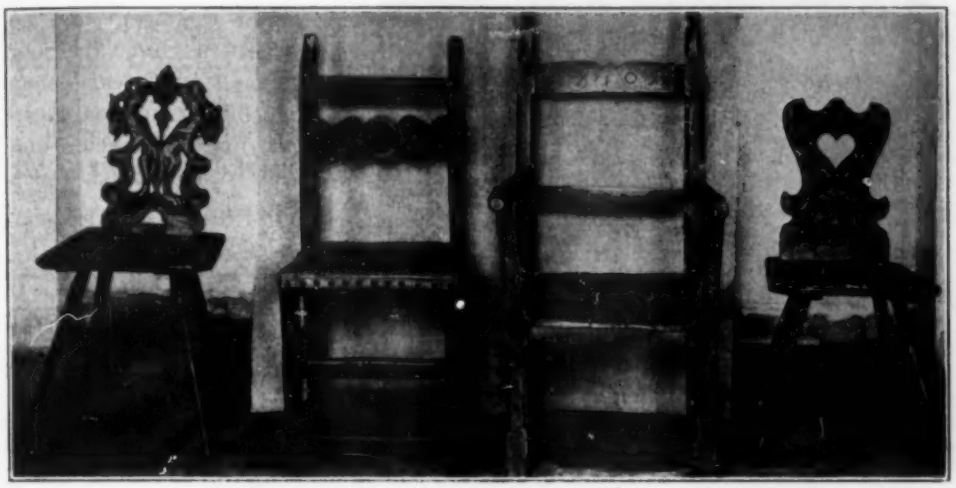

Fig. 7.—Chairs.

The difficult question of how to arrange the majolica ware is solved in a new and, in our opinion most instructive, manner. The many and very representative majolica jars are placed according to their period and style, which usually is closely related to the place of manufacture. Thus one may, so to speak, journey over the shelves from Faenza, Florence and Siena to Genoa, Savona, Milan, etc., crossing the Alps to Switzerland, and on to France, to Holland and finally to Germany.

The mortars are arranged more with regard to the period and style they represent than to the countries or places of origin. The books are exhibited in two large table cases of the pharmacy, also in a special bookcorner in the study. In the study we also find most of the apparatus and utensils, those used in connection with fire are on or around the fireplace. The glass and wood containers, relatively uniform in appearance, are not grouped into special classifications. The portraits, engravings and illustrations, as far as they do not adorn the walls, are arranged on a special display rack.

The stuffed animals (Fig. 6) adorning the walls were in old times more than a decoration of the shop. Crocodiles, lizards, tortoises, sharks, etc., or at least

Fig. 8.—Fireplace in the Study.

parts of them, were used as remedies in themselves, and people seeing their stuffed forms in the pharmacy were thereby convinced that they indeed received the rare drugs secured therefrom and no substitutes. Even the poor Mantuan apothecary shop which Shakespeare mentions in "Romeo and Juliet," contained such animals:

"And in his needy shop a tortoise hung,

"An alligator stuffed, and other skins of ill-shaped fishes."

There are on the market drug products in liquid form designated as "Ovarian Extract" or by some similar title. In some instances these products have been found not to contain the known therapeutically and physiologically active constituents of ovary, namely, those having estrogenic and progestational activities. The Food and Drug Administration is of the opinion that such inert or essentially inert preparations when sold as "Ovarian Extract," or under any other designation or under labeling which states or implies that such active principles are present, are both adulterated and misbranded as those terms are defined in the Federal Food, Drug and Cosmetic Act, according to W. C. Campbell, Chief, U. S. Dept. of Agriculture.

RESEARCH AWARD.

Mr. Harold S. Feldman, B.S., 1939 honor student and graduate at the Massachusetts College of Pharmacy, has been appointed National Formulary Fellow in Pharmacognosy for the session of 1939–1940, under a research grant from the AMERICAN PHARMACEUTICAL ASSOCIATION.

The first drug to be taken up for study is Chionanthus. The usual survey of the general description, the structure and the diagnostic elements of the powder will be made; also careful study will be made of the extractive material, especially with reference to the saponin content. It is expected that studies will be made on other drugs during the College session.

INTERIM REVISION ANNOUNCEMENT NO. 2. NATIONAL FORMULARY. SIXTH EDITION.

By action of the Committee on National Formulary and with the approval of the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION, the following monograph of the National Formulary, Sixth Edition, is revised, as indicated below; this revision will become official on July 1, 1940.

LIQUOR ANTISEPTICUS N. F.

N. F. Antiseptic Solution.

Liq. Antisept. N. F.

Boric Acid	25.0	Gm.
Thymol	0.5	Gm.
Chlorthymol	0.5	Gm.
Menthol	0.5	Gm.
Eucalyptol	0.1	cc.
Methyl Salicylate	0.2	cc.
Oil of Thyme	0.01	cc.
Alcohol	300.0	cc.
Distilled Water, a sufficient quantity, To make	1000	cc.

Dissolve the boric acid in 650 cc. of hot distilled water and allow the solution to cool. Dissolve the other ingredients in the alcohol. Mix the two solutions and add sufficient of the water to make the product measure 1000 cc. Keep the product in a tightly closed container for two hours or more; then filter it using purified talc, if necessary, to clarify the product.

NOTE: Denatured alcohol Formula No. 38-B has been approved by the U. S. Treasury Department as suitable for use in this preparation provided that adjustment be made for the quantities of the formula ingredients present in the denatured alcohol.

Description and physical properties.

N. F. Antiseptic Solution is a clear, colorless liquid having an aromatic odor and a characteristic taste.

The specific gravity of the Solution at 25° C. is about 0.971.

Test for identity and purity.

N. F. Antiseptic Solution is acid to litmus paper.

Quantitative test for boric acid.

Dilute turmeric T.S. with 15 times its volume of alcohol. Dissolve 2.3 Gm. of boric acid in a sufficient quantity of an alcoholic-aqueous mixture (30 in 100) to make 100 cc. of the boric acid solution. Mix 2.0 cc. of the turmeric dilution with 25 cc. of the N. F. Antiseptic Solution and another 2.0 cc. of the turmeric dilution with 25 cc. of the boric acid solution. Allow the mixtures to stand for ten minutes and then compare them in a colorimeter. The intensity of color developed in the mixture containing the Antiseptic Solution is not less than that developed in the mixture containing the boric acid standard solution. (*Not less than 92 per cent of the formula amount of boric acid.*)

Test for antiseptic value.

Add 0.5 cc. of the standard culture of *Staphylococcus aureus* to 5 cc. of N. F. Antiseptic Solution, mix intimately by gentle rotation, and keep at 37.5° C.; the standard culture and the Antiseptic Solution both should be at this temperature before the test is made. After exactly five minutes, transfer one standard loopful of the mixture to each of three subculture tubes containing 10 cc. of standard culture medium. Incubate these tubes for 48 hours at 37.5° C.: no bacterial growth appears in the subculture tubes.

The Standard Culture. Transfer the living organisms of *Staphylococcus aureus* to standard culture medium and incubate at 37.5° C. After about 24 hours, transfer from this incubated culture to fresh standard culture medium, incubating the new culture at 37.5° C. Repeat this process again after 24 hours. This standard culture is cloudy; do not filter it, but shake it thoroughly, and then allow it to settle for about 15 minutes before it is used. When tested as directed above, the living organisms in this standard culture are all killed when admixed with 1 in 80 aqueous phenol solution for ten minutes, but are not all killed when admixed with 1 in 90 aqueous phenol solution for ten minutes.

The Standard Culture Medium. Dissolve 5 Gm. of beef extract, 5 Gm. of sodium chloride and 10 Gm. of peptone in 1000 cc. of distilled water. Boil for 20 minutes, cool and make up to original volume with distilled water. Adjust with sodium hydroxide T.S. to *pH* 6.8, using bromthymol blue as the indicator. Filter through paper, place 10 cc. in each sterile, cotton-stoppered tube, and sterilize for 40 minutes at 15 pounds' pressure. To maintain the *Staphylococcus aureus* strain within the required range of resistance, it is necessary to make the beef broth with a peptone especially prepared for this purpose.

The Standard Loopful. The standard loop is a 4-mm. (inside diameter) single loop at the end of a piece of No. 23 B. of S. gage platinum wire, 4 to 8 cm. long, and set in a suitable holder, such as a glass or aluminum rod. The wire is bent so that the loop forms a slight angle with the straight wire. To obtain a standard loopful from a tube containing liquid, hold the tube at an angle of about 60°, so that the plane of the loop is parallel with the surface of the liquid.

Alcohol content: From 26 to 29 per cent, by volume, of C_2H_5OH.

FOR EXTERNAL OR ORAL USE: Undiluted.

HERMAN H. BLOMEIER.

Herman H. Blomeier died November 4th after a short illness, at his home in New York City. Mr. Blomeier was born in St. Louis, Mo., in 1861 and graduated from the St. Louis College of Pharmacy in 1881. He came to New York in 1883 and operated a store at 439—9th Ave., for thirty years, retiring in 1930. He had been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1915, was also a member of the New York Pharmaceutical Association, New York County Pharmaceutical Association, and German Apothecaries Society.

Surviving are a daughter, Mrs. I. C. Howard; and three sons, Walter, George and Herbert.

GEORGE A. GORGAS.

Dr. George A. Gorgas, prominent druggist and philanthropist of Harrisburg, Pa., died November 12th. He was a Life Member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Mr. Gorgas was born in Cumberland County, Pennsylvania, and received his early education in the public schools and the State Normal School at Shippensburg. He was an apprentice in the drug store of Daniel H. Hamaker and matriculated at the Philadelphia College of Pharmacy, from which he graduated in 1881. He purchased the store of I. D. Lutz in 1883 and later opened two branch stores. Recently he retired from active business. Dr. Gorgas was a loyal member in the Pennsylvania Pharmaceutical Association, serving as president in 1906. The Gorgas Model Pharmacy at the Philadelphia College of Pharmacy and Science was made possible through his efforts.

GEORGE CHALMERS HALL.

At the age of seventy-five years, at his home in Kalamazoo, Mich., on December 6th, George C. Hall went home. He was a cofounder of the Zemmer Company, in Pittsburgh, Pa., but had retired in 1928, due to failing health.

Mr. Hall served as president of the American Pharmaceutical Manufacturers Association from 1913 to 1915, at which time the association was named the American Association of Pharmaceutical Chemists. He had been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1914. He also belonged to the various Masonic bodies of Brooklyn, N. Y. He maintained a home in Florida, where he was active in civic affairs. He also was a member of the Kalamazoo Country Club and of the New York Alumni Club of the University of Michigan, having graduated from the latter with the degree of Ph.C., in 1883. He began his career with Parke, Davis & Co., Detroit, in 1888.

Mr. and Mrs. Hall recently celebrated their Golden Wedding Anniversary. Surviving are his wife, the former Edith May Mizner; a daughter, Mrs. Roger Talmadge Lively, and a granddaughter, Edith Hall Lively, of Atlanta, Ga., and one brother.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1938–1939.

Office of the Secretary, 2215 Constitution Ave., Washington, D. C.

LETTER NO. 2.

October 27, 1939.

To the Members of the Council:

For the information of the new members of the Council, it is pointed out that motions made by mail in the interim between meetings of the Council require no second.

Enclosed are copies of the minutes of the meetings of the old and the new Council held during the Atlanta meeting, and as they will appear in the Proceedings Number, November issue of the JOURNAL. The meetings of the old Council constitute Council Letter No. 12, 1938–1939, and the meetings of the new Council constitute Council Letter No. 1, 1939–1940.

The ASSOCIATION roster, including committees, appeared in the September issue of the JOURNAL.

24. Research Award. The following recommendation has been received from Chairman George D. Beal of the Committee on Laboratory: "I am pleased to advise you that the majority of the Committee on Laboratory have approved the grant of $400 to Dr. Justin L. Powers of the University of Michigan for 'a chemical study of the Viburnums.' Drs. Munch and Youngken will be collaborating with Dr. Powers in an advisory way."

Under Item No. 99, Committee on Laboratory, page 55 of the minutes of the old Council as enclosed, will be found a report of the awards approved at that time. The proposed award to Dr. Powers completes the list and covers the funds available from the Research Fund.

(*Motion No. 1*) It is moved by Kelly that the recommendation of the Committee on Laboratory that a grant of $400 be made to Dr. Justin L. Powers for "a chemical study of the Viburnums" be approved.

25. Local Secretary for the 1940 Meeting. The Secretary is advised that the Local Committee have unanimously nominated L. C. Bird as Local Secretary for the Richmond meeting, and that a recommendation as to the time and place of this meeting will be submitted later.

Mr. Bird is a graduate pharmacist and served as Chairman of the Committee that handled the arrangements for the meeting of the American Association for the Advancement of Science, held in Richmond during the latter part of December 1938.

(*Motion No. 2*) It is moved by Kelly that L. C. Bird be elected as Local Secretary for the 1940 meeting to be held in Richmond.

26. Use of Text of the N. F. VI. Recently Lea & Febiger were granted permission to quote the A. PH. A. Code of Ethics in the forthcoming textbook on Pharmacy by Blome and Stocking (see Council Letter No. 11, 1938–1939, item 79). Since that time Lea & Febiger have also requested permission to use the text of the N. F. VI for partial reproduction in this book and Chairman DuMez of the Committee on Publications, advises, after looking over the text, that he sees no reason why the request should not be approved.

The following communication has also been received from Chairman DuMez: "I have reviewed the sample pages of the galley proof of Dr. Goodman's book on 'Therapeutics of Internal Diseases' and find it to be entirely satisfactory. I therefore recommend to the Council that permission be granted the D. Appleton-Century Company to use portions of the text of the N. F. VI for comment in Dr. Goodman's book on 'Therapeutics of Internal Diseases,' and that the usual nominal fee be charged."

(*Motion No. 3*) It is moved by DuMez that Lea Febiger be granted permission to use portions of the text of the N. F. VI in a forthcoming textbook on Pharmacy by Stocking and Blome; and that the D. Appleton-Century Company be granted permission to use portions of the text of the N. F. VI for comment in Dr. Goodman's book on "Therapeutics of Internal Diseases," in each case with the usual fee of $5.00 and the customary acknowledgment.

27. Applicants for Membership. The following applications, properly endorsed, accompanied with the first year's dues, and recommended by two members of the ASSOCIATION, have been received:

Nos.: 1, Erik Vejborg, 6 Jernbanegade, Copenhagen, Denmark; 2, Sister M. Teresa Bramsipe, 601 N.W. 9th St., Oklahoma City, Okla.; 3, Edward Miller, 3000 E. Baltimore St., Baltimore, Md.; 4, Samuel W. Arnett, Eli Lilly & Co., Indianapolis, Ind.; 5, Jeanne F. Rounds, 1812 Monroe, Pullman, Wash.; 6, Walter F. Fortmeyer, College Sta., Box 412, Pullman, Wash.; 7, Donald A. Robbie, 1207 College Sta., Pullman, Wash.; 8, Bert Eldred, 1725 B St., Pullman, Wash. 9, Ben G. Martin, 1701 A St., Pullman, Wash.; 10, Arthur K. Benedict, 511 Oak, Pullman, Wash.; 11, Dorothy M. Flemmons, Box 734, University, Miss.; 12, Thomas G. Senter, Box 553, University, Miss.; 13, Robert P. Tansey, 98 Dover, Newark, N. J.; 14, Lovell D. Hiner, S. Dak. State College, Brookings, S. Dak.; 15, Thomas R. Hughes, c/o John H. Witte & Sons, Burlington, Ia.; 16, Haakon Bang, 1304 Maple St., Pullman, Wash.; 17, Keith Weidemann, 402 Oak St., Pullman, Wash.; 18, Junichi Tomita, 402 Oak St., Pullman, Wash.; 19, Earnest Brensel, 402 Oak St., Pullman, Wash.; 20, Paul J. Jannke, College of Pharmacy, Lincoln, Nebr.; 21, William P. Buttery, Globe, Ariz.; 22, Wm. H. Michelson, 6 TEO House, Auburn, Ala.; 23, Marion H. McMullen, 135 Tichenor Ave., Auburn, Ala.; 24, Claude G. Godard, 372 N. College St., Auburn, Ala.; 25, Lewis E. Harris, 1920 Jefferson Ave., Lincoln, Nebr.; 26, Lloyd W. Hazleton, Georgetown Medical School, Wash., D. C.; 27, Leonard L. Pearlman, 968 Montgomery St., Brooklyn, N. Y.; 28, John W. Snowden, 232 S. Lake St., Aurora, Ill.; 29, Jeremiah Ciancia, 467 Greenmount Ave., Cliffside Park, N. J.; 30, Edward P. Kuhl, 511 Ferris St., Ypsilanti, Mich.; 31, Russell H. Fiske, Pharmacy Quarters, Ann Arbor, Mich.; 32, Kenneth N. Stahl, 121 N. Van Buren, Iowa City, Ia.; 33, Emanuel Dichter, 4420 Broadway, New York City; 34, Sister Mary T. Gurtner, St. Clara Convent, Sinsinawa, Wis.; 35, Donald L. Newland, 1316 E. 37th St., Brooklyn, N. Y.; 36, James E. Massey, Hahira, Ga.; 37, Zed J. Wampler, 2408 Stuart Ave., Richmond, Va.; 38, Oscar Colsky, 876 N. Parkway, Memphis, Tenn.; 39, Samuel S. Loseff, 310 S. Michigan Ave., Chicago, Ill.; 40, Sam E. Leveton, 3319 S.W. First Ave., Portland, Ore.; 41, H. N. Ruud, 12th & Jackson St., La Crosse, Wis.; 42, Walter D. Kemp, 2051 Telegraph Ave., Oakland, Calif.; 43, Marcell Bachstez, C.d. Zarageza 19, Coyoacan, D.F., Mexico; 44, Elliot V. Davis, 814 Gordon, Allentown, Pa.; 45, Isabella B. Kasper, 6063 54th Place, Maspeth, N. Y.; 46, Charles R. Hay, 2123 N. Meridian St., Indianapolis, Ind.; 47, Henry D. McNierney, 2820 Ditmars Blvd., Queens, N. Y.; 48, Clarke Affleck, 2601 N.E. Union Ave., Portland, Ore.; 49, Phyllis M. Smith, 2215 E. 12th, Davenport, Ia.; 50, Estella V. Zapalac, Fayetteville, Tex.; 51, L. R. Shadwell, 3909 Hanover Ave., Richmond, Va.; 52, Sam Harschfled, 335 N. Rodney, Helena, Mont.; 53, William G. Harreld, Fourth & Allen St., Owensboro, Ky.; 54, Elmer L. Glaser, 169 Fairfield Ave., Bellevue, Ky.; 55, Charles O. Black, 228 W. Main St., Frankfort, Ky.; 56, W. E. H. Schneider, Jr., 90 Engle St., Englewood, N. J.; 57, Elliott E. Leuallen, 4209 Chester Ave., Philadelphia, Pa.; 58, Georgianna S. Gittinger, 530 N. Charles, Baltimore, Md.; 59, Horace J. Barnes, Box 737, University, Miss.

(*Motion No. 4*) Vote on applications for membership in the ASSOCIATION.

E. F. KELLY, *Secretary.*

LETTER NO. 3.

November 22, 1939.

To the Members of the Council:

28. Research Award. At the request of members of the Council, consideration of the proposed award to Dr. Powers and action on Motion No. 1 will be deferred until the meeting of the Council mentioned below.

29. Local Secretary for the 1940 Meeting. Motion No. 2 (Council Letter No. 2, page 1063) has been carried with the following members voting in the affirmative: Ke, Hi, Dm, La, Ho, Ch, Du, Li, Fi, Ta, Ck, Co, Fo, Je, and Mr. Bird has been notified of his election.

30. Use of Text of the N. F. VI. Motion No. 3 (Council Letter No. 2, page 1063) has been carried with the following members voting in the affirmative: Je, Fo, Co, Ci, Ta, Fi, Li, Du, Ch, Ho, La, Dm, Hi, Ke, and Lea & Febiger and the D. Appleton-Century Company have been so advised.

31. Election of Members. Motion No. 4 (Council Letter No. 2, page 1063) has been carried with the following members voting in the affirmative: Dm, La, Ho, Ch, Du, Li, Fi, Ta, Ck, Co, Fo, Je, Hi, Ke, and applicants numbered 1 to 59 inclusive are declared elected.

32. Mid-Year Meeting of the Council. (see Council Letter No. 1, item 23) The request to hold the meeting of the National Drug Trade Conference on a Monday was presented to the Executive Committee of that body, but since the AMERICAN PHARMACEUTICAL MANUFACTURERS ASSOCIATION will meet in Washington on Monday, Tuesday and Wednesday, 4th, 5th and 6th, and as it is important that the two groups meet at about the same time, it was decided to hold the meeting of the National Drug Trade Conference on Saturday, December 2nd. In view of this development, the officers of the Council decided that it would be more convenient to hold the meeting of the Council following rather than preceding the meeting of the Conference.

The mid-year meeting of the Council is therefore called for *Sunday, December 3rd*, to be held at the American Institute of Pharmacy, beginning at 10:00 A.M. It may be necessary to continue the meeting of the Council on Monday.

E. F. KELLY, *Secretary.*

THE ASSOCIATION FOR THE ADVANCEMENT OF PROFESSIONAL PHARMACY.

Dr. Robert Swain, editor of *Drug Topics*, and nationally known leader in the fields of Pharmacy and Public Health, addressed the meeting at the Hotel Empire on Tuesday, October 24th. He spoke on "The Problems of Pharmacy To-day," dealing especially with the trend toward professional specialization. He commended the Association for its efforts to advance Pharmacy along professional lines and pointed out the problems which the future will bring, giving the members the benefit of his wide experience and travels by pointing out that the health- and science-minded public could be educated to regard Pharmacy as a science and a profession, and told of the ways in which pharmacists in other cities had met problems.

It was decided that a part of each program in the future would be used to inform the members of newly-introduced therapeutic agents in order to keep up-to-date.

The meeting was well attended by the senior students of the local Colleges of Pharmacy. The seniors of all of our local Colleges of Pharmacy are being invited to future meetings in order that they may become acquainted with the Association's activities and derive the benefits thereof.

Among the various committees appointed was one that will coöperate with any other organization if and when the opportunity is presented to represent Pharmacy at the World's Fair in New York in 1940.

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"The Medical Appliance Department in the Professional Pharmacy" was the topic presented by the members of the Association for the Advancement of Professional Pharmacy at the Hotel Empire on the evening of November 21st.

Exhibits and detailed descriptions of Oxygen Equipment, Orthopedic Appliances, Special Hypodermic Accessories, Physician's Diagnostic Reagents and Equipment, Surgical Instruments, Newer Biologicals, and Ampoules were presented by the members with the assistance of the manufacturers. In spite of the fact that this was a completely new type of program, attendance was the largest in the history of the organization and the program was voted a great success.

Professor A. Taub of Columbia University College of Pharmacy presented the first of a new series of reports on "What is New in Pharmacy." The purpose of these reports is to keep our members up-to-date on current scientific events in Pharmacy and the allied sciences.

Senior students of all local Colleges of Pharmacy were invited and attended the meeting.

Dr. Harry Goldwag presented a report on the progress of the Joint Committee of all the New York Pharmaceutical Associations in regard to the World's Fair for 1940 and the Pharmacy exhibit that is planned.

Among our various guests were: Dr. Ralph Clark, Director of the Pharmacy Service Department of Merck and Company and Thomas A. J. Rocchio, President of the New York State Pharmaceutical Association.

PROCEEDINGS OF THE LOCAL AND STUDENT BRANCHES

CHICAGO.—The 259th meeting, opening the 1939–1940 season, was held on Tuesday evening, October 17th. President Templeton presided, with a cordial welcome to the 95 members and friends present, and a discussion of plans for the coming season.

The following resolution offered by Mr. Lewis E. Martin was adopted:

WHEREAS: The Creator has removed from our midst on August 5, 1939, an ardent member of our ASSOCIATION, a charter member and former President of the Chicago Branch (Professor Clyde M. Snow); and

WHEREAS: Professor Snow was a pharmacist and educator of national reputation and a leader who strove with constancy for the attainment of high ideals for American Pharmacy; and

WHEREAS: In the death of Clyde M. Snow the pharmacists of America and the members of the Chicago Branch in particular have lost a courageous leader and a true friend whose precepts and example will long remain and will hold before us high ideals; therefore be it

Resolved: That we, the members of the Chicago Branch, do express our admiration for the character of Clyde M. Snow and our deep sorrow in his loss, and that we offer our sympathy and condolences to his widow; and be it further

Resolved: That a copy of these resolutions be spread upon the minutes of the Chicago Branch and a copy be sent to Mrs. Snow.

Professor Terry discussed the Second Supplement to the U. S. P. XI with regard to changes in monographs, additions of new drugs and preparations both pharmaceutical and biological, etc.

Mr. Shkolnik reported the N. A. R. D. Convention in St. Paul referring to the resolutions offered, general section meetings, general sessions and entertainment.

The Secretary gave a brief review of the Atlanta meeting of the A. PH. A.

As a final feature, Mr. B. B. Brody, who had made a trip to Mexico during the summer, talked on Mexican pharmacies, their pharmaceutical education resources, etc., interspersed with entertaining and humorous incidents which had occurred and visits made on the trip.

The meeting was thoroughly enjoyed by all present.

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The 260th meeting was held on Tuesday evening, November 21st, President Templeton presiding. More than 100 members and guests heard Mr. H. C. Phibbs of Phibbs Advertising Agency in Chicago present his personal views on the subject of "Pharmaceutical Promotion."

Mr. Phibbs challenged the house with his more or less radical views on coming trends in Pharmacy. His belief is that the pharmacist should be strictly the dispenser of preparations and allow the manufacture of these medicaments, their assay, control, etc., to rest completely in the hands of the laboratories of the modern pharmaceutical manufacturing houses, who, Mr. Phibbs states, have the proper facilities to handle these important factors; whereas the average drug store does not. He holds that the strict control of manufacture, the methods of chemical and bio-assay, and the research carried on in these large and well-equipped laboratories is beyond the realm of the man behind the counter.

Mr. Phibbs was of the opinion that this would not result in a loss of jobs for men in Pharmacy but would make necessary a better training to equip these men for positions as true pharmacists and not "mere drug clerks." Men in Pharmacy should possess a more thorough knowledge of the medicaments they dispense and keep abreast of the times as to modern pharmaceutical research products of which we see, day by day, an ever increasing amount.

The speaker stated it was his belief that within a short time to come, there would be two types of stores: a general merchandising store and the true ethical prescription pharmacy; and he held that such a move will greatly advance Pharmacy as a profession in the general public health program of the nation.

The live interest shown by those present at the meeting was displayed in the very lively discussion which followed Mr. Phibbs' presentation. His opinions were argued pro and con.

The meeting was adjourned with a rising vote of thanks to Mr. Phibbs for his challenging presentation of a subject so vital to the heart of modern pharmaceutical pursuits.

EDWARD E. VICHER, *Secretary.*

THE CITY OF WASHINGTON.—The May meeting was held on the 15th with about sixty persons present. The minutes of the April meeting were read and approved and letters from Dr. Swain and Dr. McClosky were read. There being no reports, Mr. Hall asked Dr. Fuller to introduce Dr. A. G. Murray, of the Food and Drug Administration, who spoke on "The Food, Drug and Cosmetic Act as It Affects the Pharmacist in or Near the District of Columbia." Dr. Murray covered briefly those points of the Act dealing with new drugs, dangerous drugs, the obtaining of applications, repackaging, stock on hand at the time of the passage of the Act, and the guarantee provisions. Dr. Murray's paper is on hand and mimeographed copies will be made for anyone wishing them. Dr. Murray left with the secretary several copies of a sheet entitled "The Labeling of Drugs under the Provisions of the Federal Food, Drug and Cosmetic Act of 1938." This sheet gives in condensed form, with references to the individual clauses of the Act, such information as is available under the headings: "General Provisions," "Label and Labeling," "The Label Should Contain," "The Label or Other Labeling Should Contain," "The Label and Labeling Should Not Contain," "Approval of Labeling or Formulas," and "Advertising, Use of Mails, and State Laws." Copies of this sheet can be obtained from Dr. Murray or from the secretary.

Following the paper, there was a more detailed discussion of these points.

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The October meeting was held at the Institute of Pharmacy with 40 present. The minutes of the last meeting were read and approved, and the secretary reported that the treasury showed a balance of $141.21. Mr. Reznek reported that the programs for the ensuing meetings would be as follows:

December, Frank M. Head, "Retail Drug Store Operation."
January, "Banquet and Installation of Officers."
February, School of Pharmacy, George Washington University.
April and May open.

Dr. Hilton introduced Mr. D. L. Maxwell who began his pharmaceutical career in Dr. Hilton's store. Mr. Maxwell in turn introduced his partner, Mr. I. A. Tennyson. These men decided that since the prescription was a necessity, the success of their store depended upon encouraging doctors to write prescriptions and then through store service to make them dependent on their store for this service. This was accomplished *first* by keeping on hand for the doctor's information all of the latest literature which could easily be kept up-to-date by cultivating the detail men; *secondly*, by keeping a full and up-to-date stock on the shelves—they insist upon being detailed first, and using the detail man as a messenger to decide if a new product is good enough to be put on the shelf; and *third*, give prompt delivery.

Mr. Maxwell described the techniques and systems developed in their stores for increasing efficiency and decreasing the probability of error in filling prescriptions. All new products are kept out on the prescription desk for a week or ten days to familiarize the pharmacists with them. All prescriptions for ointments and eyedrops are specially checked for appearance and cleanliness of container. All prescriptions must bear a number and the name of the patient. Labels must be neatly typed with the proper punctuation and bearing the doctor's full name. All prescriptions received over the counter are read aloud with special care in reading the patient's name. All package labels are checked against the prescription by another person reading them aloud.

Mr. M. G. Goldstein, chairman of the Committee on Pharmacy Week of the District of Columbia Pharmaceutical Association, described the efforts of his committee to arouse public interest. This was being done through spot announcements and programs over the radio, through newspapers, drug store window displays, speakers before clubs and other meetings, and special displays which were distributed to every store. A fifteen-minute program was broadcast every day, the titles of which were: Geography and Medicine, Pharmaceutical Education, the Phar-

macist as a Purveyor of Drugs, the Pharmacist and the Public, the Pharmacist and New Prescriptions and the Pharmacist as a Guardian of Public Health.

The talks were followed by discussion after which refreshments were served.

KENNETH L. KELLY, *Secretary.*

CONNECTICUT COLLEGE OF PHARMACY STUDENT BRANCH.—On Monday, October 23rd, a short business meeting was held, at which time the following officers were elected: *President*, Jack Kraut; *Vice-President*, Milton Zimmerman; *Treasurer*, Benjamin J. Frankel; and *Secretary*, Charles Blumenthal.

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The regular meeting was held on November 10th at the College. Former President Abraham Wolfthal presided over the first part of the program until the officers for the fiscal year could be installed.

The reports of the secretary and treasurer were approved. Dean Henry S. Johnson then gave a short résumé of the activities of the first meeting of the Student Branches at the A. PH. A. convention which he attended. Presiding officer, Abraham Wolfthal, then introduced Prof. Leslie Barrett of the faculty who proceeded in his own fine and splendid manner to install the officers for the present school year. They are: *President*, Jack Kraut; *Vice-President*, Milton Zimmerman; *Treasurer*, Benjamin Frankel; *Secretary*, Charles Blumenthal.

President Kraut appointed the necessary committees, after which Mr. Wolfthal gave a fine message, presenting many recommendations on which action by the Branch will be taken at the next meeting. Briefly they are: consider membership, adequate publicity, variations in types of meetings, the setting aside of funds to send a representative of the Branch to the annual A. PH. A. Convention.

Prof. F. D. Lascoff of Columbia University College of Pharmacy was introduced and spoke on "Prescriptions and the Problems of Handling." An interesting discussion followed with questions from the floor. A rising vote of thanks was extended to Professor Lascoff for his splendid address.

CHARLES BLUMENTHAL, *Secretary.*

LOUISVILLE COLLEGE OF PHARMACY STUDENT BRANCH.—On October 10th the first meeting of the school year was held and was attended by the entire student body. All of the members made short talks concerning the objectives of the organization, a résumé of some of its past achievements, and plans for the coming year. This was followed by a motion picture on safety glass.

At this meeting a membership drive, which has been very successful to date, was started.

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The regular monthly meeting for November was held on the 14th, was attended by the entire student body and addressed by Sister Crescentia Wise, S.C.N.B.S. in Pharmacy, who graduated from our school in 1927 and is now in charge of the pharmacy at Sts. Mary and Elizabeth Hospital. Sister Crescentia spoke on "Hospital Pharmacy," bringing out many of the opportunities and duties of hospital pharmacists, and methods of doing business peculiar to hospital pharmacy.

In observance of National Pharmacy Week we installed a window display in one of the downtown banks. We also presented two fifteen-minute radio programs of the interview type. These programs were made possible through the courtesy of WAVE, with George W. Grider, senior student, and James D. Bradbury, junior student, as the speakers, and over WGRC with Harry W. McIntosh and Hugh E. Wedding, senior students, as the speakers.

Starting with the November issue we are having a regular A. PH. A. section in the *Kentucky Pharmacist*.

Our Branch meets monthly, at which time we have a speaker who presents something of general interest; and these meetings are attended by the entire student body.

JOHN J. FURLONG, *Secretary.*

LOYOLA UNIVERSITY STUDENT BRANCH.—The first meeting of the school year was held on Thursday evening, October 5th, at 8:00 P.M., with President John F. Thompson presiding. Wholesalers, retailers and hospital pharmacists were also in attendance.

President Thompson summarized the activities which were carried on during the summer months. He explained the "Student Branch Award Plan" which was submitted to the AMERICAN PHARMACEUTICAL ASSOCIATION in Atlanta. A brief review of the inspection tours made in two local hospitals was also given. The Branch extended its sympathy to Mr. Walter Hall during his recent illness and flowers were sent to him.

The principal discussion at the meeting concerned the manner of approving and adopting the By-Laws of the Branch. These By-Laws were written by Miss Rosalie Centanni and Mr. Leo Babin, during the summer. A motion was made and passed, to have weekly meetings for the approval and adoption of the said By-Laws.

The treasurer, Mr. Herbert Mang, gave a complete report on the finances of the Branch.

Mr. Nicholas Montalbano was appointed, by the president, to serve as chairman of the National Pharmacy Week activities to be sponsored by the Branch. Other chairmen appointed were: Program, Rosalie Centanni; Entertainment, Helen Pitre; Publicity, Leo Babin; Membership, Marcia Heiman; and Current Affairs, Rosa Mae Poche.

Next on the program was an extensive report on student as well as other activities at the Atlanta Convention. This was presented by Mr. Nicholas Montalbano who served as secretary at the first annual meeting of Student Branches.

Dr. Eugene J. Ireland, Professor of Pharmacology at Loyola then gave an inspiring talk on "Professional Pharmacy." He pointed out the fact that the term "professional pharmacy" is often mis-used. He also cited that a valuable asset in any pharmacy is "good service."

Miss Rosemary Bertin, sophomore member, presented an interesting paper on the "History of Pharmacy Week, in the United States." She explained how Robert J. Ruth, the father of National Pharmacy Week, first conceived the idea, and how it was developed to be of international value to the profession.

The principal speaker of the evening was Mr. John Culver, City Sales Manager of the local branch of McKesson-Parker-Blake, Inc. Mr. Culver spoke on the "Commercial Aspects of Pharmacy." He brought forth the fact that in the drug stores of to-day we must offer to the public the services of six or seven departments other than the prescription department.

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The November meeting was held on the 9th, in Bobet Hall. President Thompson briefly reviewed activities of the Branch during National Pharmacy Week and thanked members, faculty and others for their wholehearted coöperation in this connection.

Dr. E. T. Wunderlich gave a fine talk on "The Knowledge of Pharmacy in the Past." He outlined the routine which had to be followed to become a pharmacist years ago and pointed out some of the differences in the duties then and now.

Mr. George Morse, president of Louisiana State Pharmaceutical Association, was next on the program. His talk was inspiring and encouraging. He said that the "future of any profession is just what the present members of the profession make it." Mr. Warren Griffon read a very interesting paper on "Sulfanilamide," explaining present uses as well as dangers in the usage of the drug. Dr. Sidney Tiblier, Dean of Loyola Dental School, next spoke and stressed the necessity for coöperation between the professions of to-day, particularly those of Dentistry, Pharmacy and Medicine.

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The December meeting was held on the 7th, at 7:30 P.M. The minutes of the previous meeting were read and adopted. President Thompson complimented Mr. Herbert Mang and Miss Marcia Heiman for their work in connection with the membership drive and briefly outlined plans for the coming year, which will include a radio presentation of "The Romantic Discovery of Digitalis."

Mr. Cassius Clay, Chief State Chemist, spoke on "The Harrison Narcotic Act." He briefly outlined the intent of the law and its effect since enactment in 1914 and said, "narcotic addiction has decreased tremendously in the state due to the caution and care of the registered pharmacists."

Miss Melanie Cassou presented an interesting paper on "The History of the Prescription," in which she traced the development of the ℞ sign. Dr. Oscar Bethea, member U. S. P. Committee, spoke on "Prescription Writing." His talk was interesting and informative; he particularly mentioned illegible prescriptions and advised the pharmacists to be very careful in such cases, and to establish better contact with the members of the profession. Mr. E. T. Wunderlich was introduced and presented to the School a bust of Asclepias, which is over 100 years old.

JUNE L. WARE, *Secretary.*

NEW YORK.—The first regular meeting of the fall season was called to order at 8:30 P.M., Monday, October 9th, at the Columbia University, College of Pharmacy. President Canis presided and about 120 members and guests were present. The minutes of the May meeting were approved as read.

The report of Mr. Currens, the treasurer, was accepted as read. Mr. Robert S. Lehman read the report for the Committee on Education and Legislation, which was accepted.

Mr. Frederick D. Lascoff explained the work of the National Committee on Pharmacy Week and exhibited cards and panels, obtainable from wholesalers, to be used in preparing Pharmacy Week Windows. He explained how they were adaptable for use in various ways so that the originality of the pharmacist could be displayed. Sets of prepared talks on Pharmacy and Pharmacy Week could be obtained from Mr. Dan Rennick of *Drug Topics*. Mr. Lascoff also announced that a monster window display devoted to Pharmacy was being installed by the National Cash Register Company in its windows at Rockefeller Center, and would be well worth seeing.

Under new business the fact was introduced that the City Council proposed a bill charging a license fee of ten dollars to be paid by the manufacturer for each preparation manufactured and/or sold in the city. The New York Pharmaceutical Council has already taken steps to protest to the authorities and to fight against its passage. By motion of F. D. Lascoff, seconded by D. Mason, it was voted that the Branch stands definitely opposed to the bill and endorses any action taken by the New York Pharmaceutical Council to prevent its passage.

There being no further business the meeting turned to the Scientific Section with D. Mason acting as chairman.

Dr. Martin Hultquist, Research Chemist, Pharmaceutical Division, The Calco Chemical Co., spoke on the "History, Synthesis and Present Status of Sulfanilamide and Its Derivatives," and Dr. Borris A. Kornblith, Director of the Lympho-Granuloma Clinic, Department of Health, City of New York, spoke on "Sulfanilamide and Derivatives in the Treatment of Venereal Diseases." Exhibits of Sulfanilamide and its derivatives were offered by Calco Chemical Co., Lederle Laboratories, Eli Lilly & Co., Merck & Co. and Winthrop Chemical Co.

After much discussion, a rising vote of thanks was accorded the speakers.

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The regular meeting was called to order at 8:30 P.M. Monday, November 13th, at the Columbia University College of Pharmacy, President Canis presiding and about one hundred members and guests present. Minutes of the October meeting were approved.

The report of the treasurer, Mr. Currens, was accepted. Mr. Robert S. Lehman read the report of the Committee on Education and Legislation, which was accepted and ordered attached to the minutes.

A letter from the New York Pharmaceutical Council acknowledged payment of $25.00 for delegates' dues for 1939.

Mr. Gustave Bardfeld presided over the Scientific Section.

Dr. J. A. Morrell, of E. R. Squibb and Sons' Biological Laboratories, the scheduled speaker, had been called away and was unable to be present. We were fortunate in being able to obtain Dr. Hans Jensen, Associate in charge of the Biochemical Laboratory of the Squibb Institute for Medical Research. Dr. Jensen is a former Assistant Professor of Pharmacology at Johns Hopkins University where he coöperated with the late Professor John Jacob Abel in purifying and crystallizing Insulin. He gave a most interesting talk on "The Relation of the Anterior Pituitary Hormone to the Sex Hormone."

Pertinent exhibits were displayed by E. R. Squibb & Sons, and by Roche-Organon, Inc.

At the conclusion of the discussion following the address a rising vote of thanks was accorded the speaker and the meeting adjourned.

It was announced that the December meeting, in response to an invitation by the Kings County Pharmaceutical Association, would be held at the Brooklyn College of Pharmacy.

HORACE T. F. GIVENS, *Secretary.*

NORTHERN NEW JERSEY.—The first meeting of the year was held at the New Jersey College of Pharmacy, October 16th, and was well attended.

Dr. Richard A. Deno addressed the meeting, speaking on the topic, "New Drugs and Pharmaceuticals of the U. S. P. Supplement No. 2."

The Program Committee outlined a tentative schedule for the year which promises a worthwhile entertainment. The president announced the following appointments as committee chairmen: Membership, Edward M. Durand; Professional Relations, George C. Schicks; Science and Practice of Pharmacy, Dr. R. A. Deno; Education and Legislation, Adolf F. Marquier; Program, Robert W. Rodman; Executive, John F. Cosgrove.

C. L. COX, *Secretary.*

NORTHERN OHIO.—The first fall meeting was held at 2035 Adelbert Road, Cleveland, October 13th. No program had been prepared for this meeting, but President Stonebraker succeeded in rounding up Doctors E. F. Kelly and C. B. Jordan who were in the city on this date, and they consented to attend our initial meeting. In response to requests for some remarks, at the close of our business session, both guests most interestingly discussed some of the activities in their respective fields of Pharmacy.

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The seventh monthly meeting of the current year was held at the same place on November 10th. At this meeting the Branch had as guest speaker Miss Bell Greve, director of the Cuyahoga County (Greater Cleveland) Relief Bureau. Miss Greve, who is well fitted for her position by training and experience, proved to be an exceptionally interesting speaker. She gave our members the concrete information they wanted, but which they had been unable to obtain from the conflicting reports from other sources.

Following the address, attention was paid to routine business affairs.

N. T. CHAMBERLIN, *Secretary.*

PHILADELPHIA.—The October meeting was called to order at 8:20 P.M. on Tuesday, October 10th, at the Philadelphia College of Pharmacy and Science.

The minutes of the May meeting were presented in abstract form and approved.

Professor Nichols, Chairman of the Program Committee, announced that Dr. Ehrenstein would discuss the subject of Hormones at the November meeting.

Dr. Osol introduced Dr. W. L. Sampson of the Merck Institute of Therapeutic Research, who reviewed the many developments in the Vitamin B Complex field.

Thiamine Hydrochloride, crystalline Vitamin B, was the first component (with the exception of Nicotinic acid) to be isolated and synthesized. Its deficiency causes the condition known as beri beri. Thiamine Hydrochloride will be recognized in the second supplement of the U. S. P. XI. It has many properties resembling alkaloids, including incompatibilities. It is water soluble and such a solution is stable at p_H 3.5–4.5 at low temperature (4° C.), and fairly stable at room temperature. It is decomposed by prolonged heating or alkaline conditions. The U. S. P. recognizes the biological assay employing rats. The colorimetric (Thiochrome) method is also accurate for assaying pure Thiamine Hydrochloride. Three micrograms of the reference standard of crystalline B_1 equal 1 International Unit. Two hundred to nine hundred units, less than 1 mg., constitute the average adult's daily requirement.

Riboflavin, formerly known as Vitamin C or B_2, has also been isolated and synthesized. This water soluble, orange-yellow, fluorescent powder is unstable to light and alkali. It is necessary to normal growth and health, and to prevent abnormalities of the nervous system and skin. Its absence is characterized by a dermatitis.

Nicotinic acid was one of the first factors found in the B complex. Its deficiency causes pellagra in humans and black tongue in dogs. B_6 is the fourth and most recent component to be synthesized. Its deficiency produces acrodermatitis in rats. There is also a filtrate factor, a de-

ficiency of which causes dermatosis in chicks. Other components have been postulated but not yet isolated. Despite the intensive research and important discoveries in this field in recent years, Dr. Sampson believes that many valuable facts are yet to be revealed.

The meeting was opened to discussion following the address. Great interest was manifest by the many questions asked, all of which Dr. Sampson graciously answered. A rising vote of thanks was accorded the speaker.

Professor Nichols presented the report as delegate to the Atlanta Convention.

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The November meeting was called to order at 8:20 P.M. on Tuesday, November 14, at the Philadelphia College of Pharmacy and Science. The Minutes of the October meeting were read and approved.

Professor Nichols, chairman of the program committee, announced that Dr. James of Temple University would discuss the subject of Enzymes at the December meeting.

Mr. Drain proposed Dr. Max Ehrenstein and Albert Augenblick for associate membership. Their nominations were unanimously approved.

Chairman Osol introduced the speaker, Dr. Ehrenstein, a research associate at Cox Institute, University of Pennsylvania. Dr. Ehrenstein opened his discussion on "Hormones of the Sex Glands and Adrenal Cortex," with a brief description of the Pituitary Gland. He stated that this secretes a non-specific gonadotropic substance which stimulates both male and female glands. The sex glands, themselves, secrete specific factors. There are two female active principles, one termed the oestrogenic or follicular hormone and the other corpus luteum. Dr. Ehrenstein explained the action of each of these in the menstrual cycle. The oestrogenic substance is measured in "Mouse Units" by the Allen-Doisy test. Corpus luteum is assayed in terms of "Rabbit Units" by the Corner-Allen method. The specific male principle is termed Testerone. It is assayed by either the "cocks comb" method or by the rate of "seminal vesicle development" that it can produce. The lecture was concluded with a discussion of the adrenal cortex hormones.

The lecturer ably employed mimeographed graphic formulas and an extensive set of slides, including colored reproductions of present commercial hormone remedies, to present an apparently complex subject in a clear, concise manner.

After an open discussion, a rising vote of thanks was extended the lecturer.

RUDOLPH H. BLYTHE, *Secretary.*

PURDUE UNIVERSITY STUDENT BRANCH.—The meeting on October 3rd at 4:00 P.M. was called to order by the president, George Osborn, with a quorum present.

The subject of having several prominent men connected with Pharmacy and Medicine as speakers, and having several of the educational pictures that are released by the pharmaceutical houses on the programs of the professional meetings, was thoroughly discussed. It was suggested that we invite the doctors, dentists and the professors to the meetings that will be of interest to them. The Chairman of the Program Committee was instructed to invite several professional men to be guest speakers, and to arrange for the showing of pictures, which would be of interest to our professional organization.

The following motion was made by H. Schaefer: That the business meetings be held on the first Tuesday of every month at 4:00 P.M., and the professional meetings be held on the third Thursday of every month at 7:00 P.M.; however, these dates to be subject to change by the Executive Committee as the need arises. This program to be followed during the school year. The motion was seconded by H. Biken and passed unanimously.

It was suggested that we request the privilege of assisting the faculty of the School of Pharmacy in the broadcasting of the programs on the "Apothecary Hour," a fifteen minute program on WBAA. The main purpose of this program is to raise the professional standards of the pharmacist in the eyes of the public.

The next professional meeting on October 19th was set aside for a reception for the students and the faculty of the School of Pharmacy in an effort to interest them in the professional activities of our Student Branch. It was suggested that we make a definite drive for new members for our organization.

Since organizing and obtaining our charter, the following new members have been added to our rolls: Jack D. Cartwright, Kenneth P. Dubois and Elmer W. Rebol.

After committee appointments had been made H. Biken appointed C. Coan and Sister Laurena Klein to decorate the show cases in the Pharmacy Building for National Pharmacy Week.

JOHN HOUSEWORTH, *Secretary.*

ST. JOHN'S UNIVERSITY COLLEGE OF PHARMACY STUDENT BRANCH.—On Tuesday, October 24th, a forum on "Problems Vital to Pharmacy," sponsored by the STUDENT BRANCH was presented. Before a school-wide assembly of students and faculty, a number of notable figures paid their tributes to St. John's celebration of National Pharmacy Week.

Dr. John L. Dandreau, Dean of the College, reviewed the long history of the annual celebration of National Pharmacy Week and urged pharmacists everywhere to give more thought and effort toward a more enthusiastic and wide-spread celebration.

In a tribute to the gathered students, Dr. John M. McDonnell, editor of the *American Professional Pharmacist*, impressed them with the importance of young blood in the years just ahead which give such promise of change. He said that the students to-day are being trained to meet a more intensified professionalism but they themselves must bring the situation about.

Mr. Irving Rubin, associate editor of the *American Druggist*, presented a short statistical survey on the importance of prescriptions to the pharmacy of to-day. He pleaded for an increased campaigning of physicians to increase their prescribing for patients.

The past-president of the AMERICAN PHARMACEUTICAL ASSOCIATION, Dr. Robert L. Swain, now editor of *Drug Topics*, told the audience of the increased "consumer consciousness" of the public which is responsible for an overwhelming desire for knowledge, especially scientific information. The pharmacist, fully trained in science, can well be involved as an important cog in this present admirable trend, and all to his advantage as he now can find a true outlet for his education.

Mr. Milton Malakoff, editor of the *New York State Pharmacist* scheduled to appear, was absent because of illness.

The meeting was arranged and conducted by J. Bernand Friedberg.

JOHN J. CORCORAN, *Faculty Advisor.*

TEMPLE UNIVERSITY STUDENT BRANCH.—The meeting was called to order on October 4th at 8:00 P.M. in the upper amphitheater of the Pharmacy Building by the president, Mr. Johnson, who welcomed the guests present, then introduced the speaker of the evening, Mr. Moran, of the Kimble Glass Co.

Mr. Moran traced the history of glass from Ancient Egypt through the ages to our present day. He explained why glass is considered a super-cooled liquid, and briefly outlined the chemistry involved in its manufacture. He discussed the importance of color in glass, to the manufacturer. Over 50,000 shades are used in glass-making. The talk was illustrated with charts showing what proportions of mixtures of the three basic substances in glass-making will yield a clear glass.

The feature of the evening was a movie showing phases of glass manufacture from the original mixing of the "batch" to the standardization of the finished apparatus. During a general discussion which followed the motion picture, Mr. Moran answered a number of questions pertaining to the machinery, the special design to suit the particular needs of the company; the short life of the huge continuous vat furnaces; and especially the six machines which produce glass tubing in a continuous length, one mile each twenty-five minutes. The speaker was accorded a rising vote of thanks.

Following the program just described, the first regular business meeting of the branch was held. The minutes were read and approved.

The prescription research project was discussed and Mr. Lipman and Mr. Johnson volunteered to make the necessary arrangements for faculty assistance and laboratory equipment.

It was suggested that the group have a publicity committee, to be appointed by the president to keep the name of the AMERICAN PHARMACEUTICAL ASSOCIATION before the students of the University.

Mr. Grube was appointed chairman of a committee to prepare and publish a paper under the sponsorship of the Student Branch, to be distributed to the student body. It will consist mainly of selected abstracts of particular interest to the pharmacy students.

REBA NEVEL, *Secretary.*

UNIVERSITY OF SOUTHERN CALIFORNIA STUDENT BRANCH.—The first meeting was held on October 12, with President James Corn in charge. Plans for the year were discussed. Membership campaign was also discussed. The president appointed a membership committee of three who will be in charge of the campaign.

The new officers for the year 1939–1940 are: *President*, James Corn; *Vice-President*, Virginia Bacon; *Secretary*, Satsuki Nakao; and *Treasurer*, Jack Greenstein.

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The first luncheon of the year was held on November 2nd, at the college, the guest speaker being Dr. C. H. Thienes, Professor of Pharmacology, University of Southern California Medical School, who spoke on his hobby, "Researches on Nicotine."

Having worked with nicotine since 1926, Dr. Thienes gave an interesting and illuminating résumé of his experiments on rabbits, mice and rats. He stated that nicotine did not stunt the growth of his test animals but that they weighed twelve per cent less than the control animals; one experiment which he conducted showed a twenty per cent increase in the size of the adrenal glands of the animals given nicotine, and another showed that the nicotine fed rats had thirty per cent less births than the control animals and the chance of the offspring to remain alive the first week was greatly reduced. He said that when women smoke while they are pregnant, their milk contains nicotine, and babies fed with this nicotined milk showed symptoms of chronic nicotine poisoning.

All of his experiments were conducted for one year or more. The daily dose fed to the animals was equivalent to the nicotine in three packs of cigarettes. The reason for the large dose is that animals are less susceptible to chronic nicotine poisoning than humans.

After his talk, he answered any question the students asked, and was accorded a vote of thanks.

SATSUKI NAKAO, *Secretary.*

WESTERN NEW YORK.—The regular meeting was held at the University of Buffalo on November 2nd. Fifteen, including the Branch officers and presidents of the local pharmaceutical associations, attended the dinner for the guest speaker held in Norton Hall at 6:30 P.M., while 126 were present for the meeting at eight o'clock.

President Raymond E. Schmitz called the meeting to order. The minutes of the last meeting and the Treasurer's report were read, approved and accepted.

The program for the Branch meetings for the academic year 1939–1940 was read by Mr. Schmitz.

Mr. Theodore A. Alfieri, President of the Pharmacy Alumni Association, announced the program of Extension Courses to be conducted by that organization during the year. At a cost of $7.50, a ticket is obtained for five lectures given at 2:30 P.M. and continued at 8:00 P.M. on the second Thursday of each month during the winter. This ticket is transferrable to pharmacists or clerks working in the same store. The subjects taken up will be of commercial nature.

Dean Lemon made a report of the Atlanta meeting. He emphasized the advantages of belonging to and the necessity for every pharmacist to support the AMERICAN PHARMACEUTICAL ASSOCIATION.

President Schmitz introduced Prof. E. Fullerton Cook who gave a very interesting talk on the Pharmacopœia, its Supplements and the relation that the official books have to the Pure Food and Drug Act. Dr. Cook said that the American Medical Association had objected to the official books because they were revised only once in ten years. The Revision Committee has met this objection by making timely supplements, permission for which was given at the Pharmacopœial Convention in 1930. At the Pharmacopœial Convention next May, the Committee will propose that the Pharmacopœia be revised in 1941, again in 1946 and each five years thereafter, with one supplement between each revision. Advisory Boards have been set up to study such fields as Vitamins, Hormones, Surgicals and Antianemic preparations for the Revision Com-

mittee. As a result of the work on Vitamins, 5000 bottles of reference standards for Vitamins A and D have been distributed by the Committee.

The last four revisions of the U. S. P. have been translated into Spanish. Some Pan-American countries now use it as their official book and others in this group are now considering it for official adoption.

Mr. Cook said that to defeat the Pure Food and Drug Act, millions of dollars were taken to Washington. As a consequence, so many amendments were made that the bill was practically worthless. Fortunately, the sulfanilamide tragedy occurred at the opportune time, the amendments were removed and the Pure Food and Drug Act now protects the public and the honest manufacturer.

Written questions were submitted by members of the audience and after a ten minute intermission, President Schmitz presented the questions to Dr. Cook.

The Branch was adjourned until December 7, 1939 at which time Mr. W. R. McHargue, of E. R. Squibb and Sons, will tell about the newer researches and discoveries in the field of Vitamins.

MARGARET C. SWISHER, *Secretary*.

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The December meeting was held on the 7th, at 8:00 P.M., Vice-President Pritchard presiding. He introduced the speakers of the evening: W. R. McHargue, manager of Vitamin Division, E. R. Squibb & Sons; R. A. Downey, pediatrist at Children's Hospital; and B. E. Obletz, orthopedic surgeon at General Hospital.

Mr. McHargue depicted the history and evolution of the vitamins, and as the best sources mentioned: milk, lemons, oranges, apples, lettuce, eggs and whole wheat bread. He presented only the newer researches and reports. In concluding he said to the physicians present, "Don't recommend the use of one vitamin if you can recommend two. Don't recommend a synthetic vitamin if you can recommend a natural one. Don't recommend a concentrated natural product if the patient will get sufficient of the vitamins from the natural food sources."

The audience then submitted written questions which were presented to the three guest speakers. All three agreed that no one knows how to prevent or how to cure dental caries. Dr. Downey warned against excessive use of vitamins, and said, "in children, Vitamin D poisoning or hyperitaminosis is frequently evidenced by lower blood calcium and toxic intestinal symptoms. For the treatment of arthritis in adults, two to three hundred thousand units are given per day. This is frequently followed by deposits of calcium in the vessels of the heart and consequent cardiovascular trouble."

The meeting adjourned until January 4th, when Dr. R. C. Page will discuss "Sex Hormone Therapy."

MARGARET C. SWISHER, *Secretary*.

Dr. Alvah G. Hall has been selected to fill the vacancy caused by the death of Dean Laird J. Stabler, University of Southern California. He has been a member of the faculty for thirteen years, and his affiliations as president of the California State Board of Pharmacy and the Alumni Association of the college, and with numerous honorary and professional fraternities make him a leader in Pharmacy.

$500,000 CAMPAIGN STARTED FOR BIRMINGHAM SCHOOL.

A campaign to raise $500,000 for Howard's Centennial in 1931–1942 has been started. At a recent convention of the Alabama Baptists, held in Montgomery, Mr. J. Linyer Bedsole, President of the Bedsole-Carvin Drug Co. of Mobile, Alabama, was unanimously elected to the Board of Trustees of Howard College of Birmingham.

Gifts of approximately $1,500,000 to Northwestern University and of approximately $1,000,000 to the University of Chicago are announced by the Trustees of the Estate of Clara A. Abbott, widow of Dr. Wallace C. Abbott, Founder of Abbott Laboratories, who died in 1924, and whose will made unusually generous provision for charity. Both gifts will be used for medical and chemical research.

DONATIONS.

Proceedings of the American Pharmaceutical Manufacturers Association, by **Mr. S. Barksdale Penick, Jr.**, Secretary of the Association.

Dr. William Gates of Washington, D. C., donated a copy De Cruz-Badiano, Aztec Herbal of 1552, a Translation and Commentary, by William Gates, President of the Maya Society, Baltimore, The Johns Hopkins University. The aquarelles represent the art work of Miss Marie Therese Vuillemin, a niece of Mons. Eugene Tisserant, prefect of the Vatican Library.

A label (VERMIFUGE), 150 or more years old, of William Dorsey, Druggist, Martinsburg, Va. This was presented through **Dr. S. J Hilton** by **Mr. Charles E. Ellicott.**

Mr. Oscar Loddy of Fitchburg, Mass., favored us with a contribution of joint efforts of the Estonian-Finland-Hungarian Pharmaceutical Societies reported by Karl Röhesco, Doctor of Pharmacy and Director of Pharmacy in Esthonia, published by E. S. U. Societies, Tallinn, contributing to the fifth annual meeting, April 30, 1939, by Kalerno Harjula.

Homeopathic Medicine Case in the form of a book, in four sections, each having three handmade bottles. The interesting case was donated by **H. A. K. Whitney**, of the hospital of the University of Michigan at Ann Arbor.

A gavel, presented to the Association by **J. Leon Lascoff.** This was presented on August 22, 1939, to Dr. J. Leon Lascoff, president of the A. PH. A., by the Crawford W. Long Memorial Association, made from the newel post in the home of Crawford W. Long, Athens, Ga., the discoverer of ether anesthesia.

A ship chest and dentifrice container, donated by **Harry L. Schrader** of Baltimore, Md. The chest is very old and bears the label of James L. Bispham, druggist, Philadelphia, Pa.

Joseph M. Moore of Baltimore, has donated a hand prescription balance and a set of weights—the definitions on the inside of the top explain the weights. The box holding the balance is made of selected quartered oak.

Chemical Catechism by Louis Szelcledy, Ph.M. (A. G. Dixon). London, December 1, 1809. The book was donated November 9th by **W. W. Scudder**—of the Medical Family of several hundred years—pharmacist at the Navy Hospital in Washington. "The Rudiments of Chemistry" is extensively illustrated showing the apparatus. Chapter I deals of Liquids; Chapter 2, of Atmospheric Air and the Elements known during the period; Chapter 3, of Caloric. A number of experiments are described and the Common Chemical Terms are given. 290 pages, 24 x 36 picas.

Manual of Chemistry, compiled from the works of Brande, Henry, Berzelius, Thomson and Others, illustrated in the lectures at Harvard University, N. E., by John W. Webster, M.D. Donated by **George I. Way**, Baltimore, Md. The book is illustrated to serve students. It was published by Richardson and Lord of Boston, in 1826. The volume is valuable from the historical viewpoint as the history is brought from earlier periods by chemists of prominence in their day.

John C. Haley, retired druggist of Washington, D. C., brought among other things: Frelighs Tonic, Pyoktannin Yellow, Calcined Magnesia, by Thomas J. Husband, Rud. Pizzala, Apothecary, Elixir of Peptonate of Iron Aromatic Manufactory of pharmaceutical and dietic preparations, Zwingenberg a Bergstr., Germany.

Mr. Leo Oumano presented the second U. S. Pharmacopœia containing a clipping from the "Voice," prepared by Dr. Charles Rice for that publication for August 3, 1893; also several other early issues of the Pharmacopœia.

PERSONAL AND NEWS ITEMS.

Eta Chapter of Rho Chi, University of Wisconsin, include with the annual initiation of members, a year of membership in the ASSOCIATION. Recently the following new members have been initiated: Amos B. Colby, James C. H. Russell, Celesta A. Meyer, Maurice B. Rudnick, Lester A. Feiertag, Sister Gladys Robinson and Harry S. Eizen.

On October 10th, thirty-four men prominent in drug circles in Louisville, Ky., left in special cars for Detroit, Mich., where for two days they were guests of Parke, Davis & Co. They visited the Parke-Davis plant; Parkedale, the company's biological farm, thirty miles from Detroit; and the Parke-Davis Research Laboratories. A talk by F. O. Taylor, Vice-President of the A. PH. A., was enjoyed, also a trip to Greenfield Village, site of Henry Ford's famous museum. An evening banquet was a feature of the occasion.

An informal meeting of Province II of Kappa Psi Pharmaceutical Fraternity, called by Satrap George E. Milliman, was held at Philadelphia, Pa. in the Philadelphia College of Pharmacy, Sunday, November 12, 1939, at

2:00 P.M. All officers of the province and one officer of the Grand Council, George C. Schicks, Grand Historian, were present. Thirty-eight brothers representing collegiate chapters: Eta, Nu, Omega, Beta-Omega; and graduate chapters: Connecticut, New Jersey, New York and Philadelphia.

The regents of the collegiate chapters were asked to report their activities and plans for the year. These reports were delivered by Thaddeus S. Poreda, Nu; Anthony Ridolfo, Omega; Victor Shivy, Beta-Omega; and Robert Gordon Johnson, Eta. It was suggested that since none of the chapters of the province were separated by many miles it would be well for the collegiate and graduate chapters to send out a monthly news-letter to each chapter in the province. By so informing the other chapters of the activities and coming events more frequent inter-chapter visitations would be encouraged.

Grand Historian George C. Schicks reported the meeting of Kappa Psi at Atlanta, Georgia and commented on the report of the Grand Secretary and Treasurer, Dr. A. R. Bliss.

Dr. Richard A. Deno suggested that since the American Association for the Advancement of Science was meeting in Philadelphia in 1940 at about the same time of the year as the quadrennial convention of Kappa Psi, an effort should be made to hold the Kappa Psi 1940 convention in Philadelphia, thus making it possible for the Kappa Psi members of the A. A. A. S. to attend both meetings. A motion requesting the secretary to make this suggestion to the Grand Council was carried.

A motion to call another informal meeting of the province in April, said meeting to be held in New Haven, Connecticut, was carried.

C. L. Cox, *Secretary, Province II.*

Alex Stewart, of Guelph, Ontario, Canada, has retired after fifty years in the drug business. For thirty-four years he has been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Mr. Stewart graduated from the Ontario College of Pharmacy with high honors, winning the D'Avignon Gold Medal. Two years after graduation he established a business of his own, and became active in the affairs of Pharmacy. He was elected to the council of the Ontario College of Pharmacy, for six years was a member of the examining board of the college and served for several years both on the finance and education committees. He was president of the college for two years.

As well as being active in professional matters Mr. Stewart found time to act as Councillor for the city of Guelph, was a member of the Board of Trade and the Building Committee, first president of the Guelph Rotary Club, president of the Canadian Club, president of the Guelph Golf and Country Club and has taken a keen interest in the Victorian Order of Nurses, last year being elected president of the local board of that organization.

Dr. George Washington Carver, Negro agricultural chemist, was selected as one of the recipients of the 1939 Roosevelt Medals, given annually for distinguished service in the fields associated with the career of the late Theodore Roosevelt. The medal was presented by the Roosevelt Memorial Assocation at a dinner in New York City on October 27th. Dr. Carver has won recognition as one of the foremost agricultural chemists in the country and as a vital factor in the economic and social progress of the South.

Dr. Crawford W. Long, of Athens, Ga., 1815–1877, discoverer of surgical anesthesia, is to be honored by a memorial stamp, which will soon be in circulation. On March 30, 1842, Dr. Long used ether when he extirpated a glandular tumor from the neck of James M. Venable, a boy in Jefferson, Georgia—the first use of ether in a surgical operation.

To commemorate national Pharmacy Week, pharmacists of Milwaukee County were honored by the Sunday Morning Breakfast Club at the Medford Hotel. Physicians and dentists joined in the program. The Milwaukee County Medical Society expressed its confidence "in the practice of Pharmacy in our community" through its president, Dr. Millard Tufts. He urged even better unity "between our allied groups in Medicine to make life still longer and happier."

Dr. C. J. Baumann, president of the Milwaukee County Dental Society, said the pharmacist's "skill, integrity and care are more keenly realized now than ever before by the profession and the public." The pharmacist, he declared, is no longer regarded "as merely one that has something to sell, but is recognized for the service he renders."

Among the visitors at the American Institute of Pharmacy, during October, were the following: Albert Price, Philadelphia, Pa.; Clayton S. Smith, Columbus, Ohio; Elmer H. Swenson, Belmont, Mass.; J. F. Hershner,

St. Louis, Mo.; Betty Stephenson, Doris E. Hemp, Eleanor White, Virginia Lee Young, Mildred Lee Ferguson, Anna Kaspar, Betty Ann Leisher, Mary E. Shaffer, Betty A. Heard, Alice Anna Harry, Frances McDaniel, Betty Price, Marguerite Taylor, Miriam L. Tull and Eliza Wootten, Baltimore, Md.; Irene Opitz, Catonsville, Md.; William Gates, Washington, D. C.; Alice Zeiler, Frederick, Md.; Mary Lou Riggs, Gaithersburg, Md.; F. O. Taylor, Detroit, Mich.; Morris F. Eisenberg, Boston, Mass.; Mr. and Mrs. W. F. Bindley, Terre Haute, Indiana.

And during November, the following: W. F. Holcomb, Detroit, Mich.; J. H. Kilmartin, Waverly, Va.; J. Charles, Washington. D. C.; A. L. Boyce, Washington, D. C.; J. R. Townsend, Washington, D. C.; Roy M. Foster, Washington, D. C.; Irving Glaser, New York City; Milton Glaser, New York City; Norman M. G. Towne, Washington, D. C.; Seymour Adler, Washington, D. C.; Esther H. Barney, Chicago, Ill.; F. E. A. Pollack, Brooklyn, N. Y.; Ralph Zaldin, Brooklyn, N. Y.

The University of Buffalo, School of Pharmacy, its Alumni Association and the Local Branch of the A. PH. A., in coöperation, are putting on an interesting program for the winter months. There will be meetings on January 10th, February 10th, March 13th, 26th and 27th. Among the items of interest is the establishment of a drug store of about 1880, in coöperation with the Buffalo Historical Society.

Announcement is made by Dr. H. Evert Kendig, dean of the School of Pharmacy of Temple University, of the appointment of Carson Frailey, Jr., of Washington, D. C., as lecturer in Pharmaceutical Law in that school. Mr. Frailey is a son of Carson P. Frailey, executive vice-president and secretary of the American Drug Manufacturers' Association. He is a graduate of Johns Hopkins University and of the Law School of the University of Maryland, and is a widely known practicing attorney. Mr. Frailey, in his lectureship, will outline the fundamental legal concepts which concern pharmacy students as prospective practitioners.

Certificates of registration were awarded to forty-nine newly registered pharmacists at the State House in Trenton, N. J., by Governor A. Harry Moore on Wednesday, November 15, 1939. In addition to an inspiring address delivered by the Governor, the new registrants were also addressed by Mr. Oscar Singer, the president of the New Jersey Pharmaceutical Association, who delivered a splendid message based on his long experience as a retail pharmacist. Mr. Singer pointed out that without strong state and local organizations, retail pharmacists are not in a position to combat present-day trade and professional problems. He urged the new registrants to continue their studies and to maintain close contact with members of the medical profession and with their colleagues.

The three chapters of the Code of Ethics of the AMERICAN PHARMACEUTICAL ASSOCIATION were read by Messrs. Adolph V. Palumbo, John J. Debus and Charles Schamach, members of the board. At the conclusion of the reading of the Code all of the new registrants signed copies thereof for filing in the board records.

A brief address on the local responsibilities of the retail pharmacist was given by Dr. Robert P. Fischelis, the secretary of the board. Mr. James A. Bauman, president of the board, presided over the exercises and introduced the speakers.

Governor Murphy of New Hampshire named, and the Council affirmed, the appointment of William G. McGrillis of Plymouth, N. H., to the State Board of Health. Mr. McGrillis is a well-known pharmacist in the state, having been in the retail drug business for over forty years and the owner of two fine drug stores, one in Bristol and the other in Plymouth. He is a graduate of the University of Maine and a past-president of the state association. In making this appointment Governor Murphy has carried out his often expressed plan to place a well-trained pharmacist on the State Board of Health, in which position the Governor made clear the knowledge and scientific training of the pharmacist would be made available to the state, in the ever-expanding medical services extended through the Health Board. Mr. McGrillis will serve for five years in this important public service.

The Maryland Pharmaceutical Association and the Baltimore Retail Druggists' Association held a regional meeting on October 19, 1939, at Braddock Heights, Md. A very interesting program was carried out.

Dean Edward Spease of the School of Pharmacy of Western Reserve University, Cleve-

land, Ohio, announced renewal of the Proctor and Gamble Fellowship for 1939–1940 conferred upon Myron W. McKinney who will come to Cleveland from Winslow, Indiana. He will continue the study for the Cincinnati Soap Company of the irritant action of soap on skin, under the direction of Dr. Leroy D. Edwards, assistant professor of Pharmacognosy and Pharmacology at the School. McKinney was graduated from Purdue in June 1939, and will receive credit toward his Master of Science degree from the Graduate School of Western Reserve University.

He announced also fellowships awarded to Miss Isabel Kippen and Miss Ann M. Picchioni, who will study under him this year to receive the degree of Master of Science in Hospital Pharmacy from the Graduate School of Western Reserve University next June. Miss Kippen, who is a graduate of the University of Alberta, has a year's leave of absence as pharmacist from the Royal Alexander Hospital at Edmonton, Alberta, Canada, to which she expects to return next year. Miss Picchioni, whose home is in Klein, Montana, received her A.B. from the University of Montana in June, 1939.

The state of **Maine** obtained its first school of pharmacy this fall when a department of Pharmacy was established at Portland Junior Technical College. Instructors were chosen from a list approved by the Maine Pharmaceutical Association, and the course will prepare candidates for state board examination and registration.

A Drugs Resources Committee has been appointed, at the request of the War Department, to coördinate the civilian and military needs of the country in time of national emergency, and its initial meeting has been scheduled with officers of the Army and Navy Munitions Board for October 24th.

The William H. Nichols Medal of the New York section of the American Chemical Society, one of the highest honors in chemical science, has been awarded for 1940 to Dr. John M. Nelson, professor of organic chemistry at Columbia University. The presentation will be made at a dinner in New York City on March 8th.

The 55th annual meeting of the **Association of Official Agricultural Chemists** was held in Washington, D. C., on October 30th to November 1st, at the Raleigh Hotel.

OBITUARY.

GEORGE W. LUFT.

A shock to the drug and cosmetic world was the announcement of the death, October 14th, of George W. Luft, one of the founders of the American Druggist's Syndicate and President of the George W. Luft Company, makers of Tangee Cosmetics. Mr. Luft passed on at the age of 68, after an emergency operation at the New York Hospital. He had been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1912.

One of the most widely-known and universally liked leaders in the drug and cosmetic field, Mr. Luft was an inspirational factor in the lives of thousands of druggists. As a registered pharmacist and a one-time store owner himself he knew their problems and was directly responsible for the advancement of many.

Born in Aurora, Illinois, Mr. Luft received his earlier schooling in the Middle West and then entered the College of Pharmacy in Philadelphia, from which he was graduated in 1894. After several years of experience in the drug business he came to New York in 1904 and helped establish the American Druggist's Syndicate, of which he was Executive Vice-President until 1920. In this capacity he became recognized as an authority and pioneer in chain store and drug merchandising.

In 1921 Mr. Luft retired from the American Druggist's Syndicate to start the George W. Luft Company and was President of that organization until his death. The Luft Company makes the remarkable color-change lipstick which was first to gain international acceptance and to become the largest selling lipstick in the world.

Aside from his business activities, Mr. Luft had long been a leader in civic and philanthropic affairs in the borough of Queens, New York. He was elected a director of the Queensboro Chamber of Commerce in 1934, and in 1936 he was general chairman of the Queens Welfare Committee's campaign to raise $250,000 to finance the committee's philanthropies for the year. He was a thirty-second degree Mason.

Surviving are his widow, Rosamund M. Luft; a daughter, Mrs. Tevis Huhn of New York City, N. Y.; and two sisters, Mrs. Robert N. Bode and Miss Anna K. Luft, both of Long Beach, California.

BOOK NOTICES AND REVIEWS.

Annual Report of the Hamburg Institute for Applied Botany. Fifty-sixth (1938) Report, coöperation of PROFESSOR DR. C. BRUNNER, F. MŒBIUS, K. HAHMANN, O. NIESER, L. MERKEL and O. NERLING; established by PROF. DR. G. BREDEMANN, Director of the Institute. This report includes a collective index for 1929–1938; previous reports may still be obtained by payment or exchange of the Botanical Museum, of the Institute, of activities of the division for seed control, etc. The contents of the annual report cover activities, interesting and valuable in research on applied botany of drugs, cultivation and products obtained. The General Index reports the activities of the Institute, contributary work by addresses, high school studies, meetings—congresses, state coöperation, etc. The investigations are carried on in the culture of various countries. Reports are also made on the unit laboratories where special work is carried on in studies of food products, animal foods and their composition, parts of plants, spices, oil, fats, gums, balsams, wax, paper production and other manufacturers and activities. The Year Book of the Department of Agriculture will give an idea of the valuable works being carried on at the Institute, where also exhibits are arranged for bringing information to the public.

Monographs on Older Medicinal Plants from the Botanical Institute, by DR. PAUL GREVE, Apothecary. A botanic-chemical-pharmaceutic contribution on *Ledum palustre* L. The subject is dealt with in three parts: Botanical, Chemical and Pharmaceutical, each subdivided—native, literature, morphology, anatomy, entomology and synonyms. The chemical description is classified in a similar way—literature, water content of the living plant and monthly determination; ash analysis, collection time, quantitative calcium content; etherial oil contained in various parts of the plant, the isolation and separation of arbutin and ericolin; extraction of constituents in plant parts.

The pharmaceutical division includes the history of the drug; its pharmacology, its use in homeopathy, biological application, testing on self, galenical uses, technical application, pharmacognostic description, prescription use. There are 43 illustrations showing sections of all parts of the plant, a wood cut of the "Kreäuterbuch" of Matthiolus, 1598, is reproduced. The study is carefully reported and makes the monograph on *Ledum palustre* quite a complete reference; it is published in German.

Bakteriologie, Serologie and Sterilisation im Apothekerbetriebe (Bacteriology, Serology and Sterilization in Pharmaceutical Practice), by CONRAD STICH, Leipzig, with comprehensive exposition of preparing sterile solutions for ampuls. Fifth edition thoroughly revised, 270 pages with 134 illustrations, color, in part, published by Julius Springer, Berlin, 1938. The previous edition was reviewed in November 1925, JOURNAL A. PH. A.

The first part considers Bacteriology and Serology and advises relative to the construction of the plant and of the apparatus, methods and location. The details of the description are helpful. The general descriptions of the bacteriolic investigations and the microscopic directions are complete and clearly presented. The work is shown in uncolored material and then in color, and explanations and selection of the dyes. The details of the presentations make this book useful to pharmacists who seek information on the subject, to those who engage in the work and well-suited for hand and reference. The special division includes pathogenic microörganisms, systematic study of pathogenic microörganisms, yeast organisms, spirilla, rhizopoda, etc.

The second part considers sterilization in its various phases, means and methods and application in practice, solutions, other preparations and in prescription work. It is necessary to have a knowledge of German, to know the terms and to have an acquaintance with the subjects discussed. The author has contributed many papers on the subjects of the book to pharmaceutical literature.

The Care of a Small Rat Colony, by R. J. MAIN. Publishers, C. V. Mosby & Company, St. Louis. 1939. 101 pages. Illustrated. Price, $2.00.

This is a brief discussion of the author's technique of handling a rat colony, including descriptions of the size and number of rooms needed, heating and ventilation, types and construction of cages and racks, cleaning, methods of mating, feeding, diseases and costs. Addresses of firms supplying equipment and feeds are furnished, as well as a chapter on the assay of Vitamin D. The book is intended primarily for those who have not had much experience in raising rats, or who may be dissatisfied with their present methods.